PRYSMIAN

Technical cable guide

June 2015





One stop-shop for all your cable needs

New Zealand edition

A brand of the Prysmian Group

DISCLAIMER

Cables must be installed according to the requirements of AS/NZS 3000, the Wiring Rules and any supplementary requirements of appropriate local Electricity Authorities, by an Electrician who holds a valid licence, appropriate to the State, Territory or Country where installation is to take place.

The Wiring Rules are applied throughout Australia by means of State and Territory Acts and Regulations.

In general these Acts and Regulations specify compliance with the Rules, however, because of local requirements, some variation to specific clauses may be called for by means of these Acts and Regulations.

Note:
Current ratings data contained in the cable selection category of this guide are based on Australian/New Zealand Standards (AS/NZSS 3008.1.2.).

Prysmian New Zealand Limited proudly manufactures in New Zealand and operates certified management systems compliant with the requirements of;

ISO 9001:2000
Quality Management Systems

AS/NZS 4801:2001
Occupational Health & Safety Management Systems

OHSAS 18001:1999
Assessment Specification for Occupational Health & Safety Management Systems

ISO 14001:2004
Environmental Management Systems

Why do business with Prysmian?

Because it pays off.

You might ask yourself why you should choose cables from us, and not from somewhere else? It's a fair question. There are many very good reasons.

First of all we're New Zealanders. We've been producing tailor-made cables here since 1946. We know what it takes to deal with the many different challenges that tough New Zealand conditions require.

Second of all we combine this local knowledge with the strength of being a global market leader. Being the world's largest producer of power and telecommunication cables means we have the muscles to innovate and customise our solutions to perfectly match your needs. At our disposal we have 91 manufacturing plants, 17 research and development centres and around 19 000 employees.

In addition we co-operate with universities, scientific institutions and, perhaps most importantly, with you. Your satisfaction is our livelihood. Based on your needs and your feedback we constantly improve to make sure our offer fits the bill.

No matter what kind of cable you need, we have it. And if not, we'll invent it. And it doesn't end there. In our offer you'll find the best technical support on the market – before, during and after.

That's why doing business with us pays off.

Please accept this latest edition of the Technical Cable Guide with our compliments.

A brand of the Prysmian Group

PRYSMIAN

One stop shop.

We have all the cables you need.

No worries. Regardless of what cables you're looking for, we have them for sure. A full market offer ranging from construction, power and telecom cables. And if not, we'll invent them. Plus, we provide you with all the services you might need – before, during and after.

A brand of the

Prysmian Group

Contents

Contents

Contents

PRYSMIAN

No need to go overseas.

We are here to serve you.

We've been producing tailor-made cables for New Zealand in New Zealand since 1946. And we will continue to do so. Our great staff of highly skilled and experienced people know what it takes to make cables that withstand everything from geothermal heat to crazy keas. Simply primo cables.

A brand of the

Prysmian Group

Power Cables

PVC Cables

PVC SDI 450/750V

Cable description:

Single Core Cable, Copper Conductor, V-90 PVC Insulated and 3V-90 PVC Sheathed, to AS/NZS 5000.2.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
*1.0SSDI	1.0	4.1	2.9	15
1.5SDI	1.5	4.5	3.5	20
2.5SDI	2.5	5.2	5.1	20
4SDI	4.0	6.2	7.4	25
6SDI	6.0	6.8	9.8	25
10SDI	10	8.2	15	35
16SDI	16	9.4	22	40

*Single Wire Conductor.
For conductors 25mm^2 and above please refer to XLPE/PVC product pages.

PVC FLAT 450/750V

Cable description:

2 & 3 Core Flat TPS Cable, Copper Conductor V-90, PVC Insulated and 3V-90 PVC Sheathed, to AS/NZS 5000.2.

Catalogue Reference		Nominal Conductor Area mm^2	Approx. Overall Dimensions mm		Approx. Mass kg/100m		Min. Installed Bending Radius mm	
2C	3C		2C	3C	2C	3C	2C	3C
*1.0ST	*1.0S3CF	1.0	6.6 x 4.3	9.0 x 4.3	5.2	7.3	15	20
1.5T	1.53CF	1.5	7.3 x 4.6	10.1 x 4.6	6.4	9.0	20	20
2.5T	2.53CF	2.5	8.9 x 5.5	12.4 x 5.5	9.9	15	20	20
4T		4.0	10.7 x 6.5		15		25	
6T		6.0	11.9 x 7.1		20		30	
10T		10	15.0 x 8.8		31		35	
16T		16	17.3 x 10.0		45		40	

*Single Wire Conductors.
2C = 2 Core. 3C = 3 Core.

◊ The cables listed above are available in Green Star approved PVC or made to order Non PVC Low Smoke Zero Halogen.

PVC FLAT 450/750V

Cable description:

2 & 3 Core plus Earth Flat TPS Cable, Copper Conductor, V-90 PVC Insulated and 3V-90 PVC Sheathed, to AS/NZS 5000.2.

Catalogue Reference		Nominal Conductor Area mm^2	Approx. Overall Dimensions mm		Approx. Mass kg/100m		Min. Installed Bending Radius mm	
2C+E	3C+E		2C+E	3C+E	2C+E	3C+E	2C+E	3C+E
*1.0STE	*1.0S3CEF	1.0	9.3 x 4.6	11.7 x 4.6	8	10	20	20
1.5TE	1.53CEF	1.5	10.1 x 4.6	12.8 x 4.6	9	12	20	20
2.5TE	2.53CEF	2.5	12.4 x 5.5	15.8 x 5.5	15	19	20	20
4TE	43CEF	4.0	14.1 x 6.5	18.3 x 6.5	19	26	25	25
6TE	63CEF	6.0	15.3 x 7.1	20.1 x 7.1	24	33	30	30
10TE	103CEF	10	19.2 x 8.8	25.8 x 8.8	38	52	35	35
16TE	163CEF	16	22.5 x 10.0	29.7 x 10.0	54	75	40	40

*Single Wire Conductor.
2C+E = 2 Core + Earth. 3C+E = 3 Core + Earth.

PVC MULTICORE CIRCULAR 450/750V

Cable description:

2, 3 & 4 Core plus Earth Circular Cable, Copper Conductor, V-90 PVC Insulated and 5V-90 PVC Sheathed, to AS/NZS 5000.2.

Catalogue Reference			Nominal Conductor Area mm^2	Approx. Overall Diameter mm			Approx. Mass kg/100m			Min. Installed Bending Radius mm		
2C+E	3C+E	4C+E		2C+E	3C+E	4C+E	2C+E	3C+E	4C+E	2C+E	3C+E	4C+E
1.52CEOC	1.53CEOC	1.54CEOC	1.5	8.3	9.0	10.0	11	13	16	35	40	40
2.52CEOC	2.53CEOC	2.54CEOC	2.5	10.0	10.9	11.9	17	20	24	40	45	50
42CEOC	43CEOC	44CEOC	4.0	11.2	12.3	13.7	22	27	34	45	50	55
62CEOC	63CEOC	64CEOC	6.0	12.2	13.6	15.1	27	35	44	50	55	60
102CEOC	103CEOC	104CEOC	10	15.7	17.5	19.4	40	53	65	65	70	80
162CEOC	163CEOC	164CEOC	16	18.0	19.8	22.2	57	75	94	75	80	90

2C+E = 2 Core + Earth. 3C+E = 3 Core + Earth. 4C+E = 4 Core + Earth.
For conductors less than $10mm^2$ please refer to Cables to AS/NZS 5000.2.

◊ The cables listed above are available in Green Star approved PVC or made to order Non PVC Low Smoke Zero Halogen.

PVC INSULATED 0.6/1KV

Cable description:

Single Core Cable, Copper Conductor, V-90 PVC Insulated, Unsheathed, to AS/NZS 5000.1.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
*1.0SBW	1.0	2.8	1.7	10
1.5BW	1.5	3.2	2.2	15
2.5BW	2.5	3.7	3.3	15
4BW	4.0	4.6	5.3	20
6BW	6.0	5.2	7.4	20
10BW	10	6.2	12	25
16BW	16	7.3	18	30
25BW	25	8.9	28	35
35BW	35	10.1	37	40
50BW	50	11.9	50	50
70BW	70	13.5	69	55
95BW	95	15.9	96	65
120BW	120	17.3	119	70
150BW	150	19.5	146	80
185BW	185	21.7	184	85

*Single Wire Conductor.

PVC COPPER SDI 0.6/1KV

Cable description:

Single Core Cable, Class 2 Conductor, Copper Conductor, V-90 PVC Insulated, 5V-90 PVC Sheathed, to AS/NZS 5000.1.
Note: Outersheath colour available: RED, WHITE, BLUE, BLACK except *1. *1, Orange insulation/Orange sheath

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
4CUPVC*1	4	7.4	10.3	30
16CUPVC	16	10	24.4	40
25CUPVC	25	11.7	36.4	47
35CUPVC	35	12.9	47.2	77
70CUPVC	70	16.5	82.4	99

◊ The cables listed above are available in Green Star approved PVC or made to order Non PVC Low Smoke Zero Halogen.

PVC ALUMINIUM SDI 0.6/1KV

Cable description:

Single Core Cable, All Aluminium Conductor, V-90 PVC Insulated, 5V-90 PVC Sheathed, to AS/NZS 5000.1.
Note: Outersheath colour available: RED, WHITE, BLUE, BLACK

Catalogue Reference	Nominal Conductor Area mm²	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
25ALPVC [NAMU]	24.5	11.6	20	46
50ALPVC [KUTU]	49.5	14.8	33	89
105ALPVC [BEETLE]	106	19.7	56	118
185ALPVC [HUHU]	185	25.2	94	151

PVC MULTICORE CIRCULAR 0.6/1KV

Cable description:

2 & 3 Core plus Earth Circular Cable, Copper Conductor, V-90 PVC Insulated and 5V-90 PVC Sheathed, to AS/NZS 5000.1.

Catalogue Reference		Nominal Conductor Area mm²	Approx. Overall Diameter mm		Approx. Mass kg/100m		Min. Installed Bending Radius mm	
2C+E	3C+E		2C+E	3C+E	2C+E	3C+E	2C+E	3C+E
1.52CEOC1KV	1.53CEOC1KV	1.5	10.1	11.0	15	18	40	45
2.52CEOC1KV	2.53CEOC1KV	2.5	11.3	12.3	20	24	45	50
42CEOC1KV	43CEOC1KV	4.0	12.9	14.0	26	32	50	55
62CEOC1KV	63CEOC1KV	6.0	14.0	15.2	33	41	55	60
102CEOC1KV	103CEOC1KV	10	16.5	18.1	43	56	65	70
162CEOC1KV	163CEOC1KV	16	18.6	20.4	59	78	75	80

2C+E = 2 Core + Earth. 3C+E = 3 Core + Earth.
For conductors less than 10mm² please refer to Cables to AS/NZS 5000.2.

PVC MULTICORE CIRCULAR 0.6/1KV

Cable description:

4 Core plus Earth Circular Cable, Copper Conductor, V-90 PVC Insulated and 5V-90 PVC Sheathed, to AS/NZS 5000.1.

Catalogue Reference	Nominal Conductor Area mm²	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
1.54CEOC1KV	1.5	11.9	21	50
2.54CEOC1KV	2.5	13.3	29	55
44CEOC1KV	4.0	15.4	39	60
64CEOC1KV	6.0	16.8	50	70
104CEOC1KV	10	20.0	69	80
164CEOC1KV	16	22.6	92	90

◊ The cables listed above are available in Green Star approved PVC or made to order Non PVC Low Smoke Zero Halogen.

PVC MULTICORE SWA CIRCULAR 0.6/1KV

Cable description:

2 & 3 Core plus Earth Circular Cable, Copper Conductor, V-90 PVC Insulated and PVC Bedded, Steel Wire Armoured, 5V-90 PVC Sheathed, to AS/NZS 5000.1.

Catalogue Reference		Nominal Conductor Area	Max. Diameter Under Armour mm		Approx. Overall Diameter mm		Approx. Mass kg/100m		Min. Installed Bending Radius mm	
2C+E	3C+E	mm^2	2C+E	3C+E	2C+E	3C+E	2C+E	3C+E	2C+E	3C+E
1.52CEOCA1KV	1.53CEOCA1KV	1.5	9.1	10.0	15.2	16.1	47	52	185	195
2.52CEOCA1KV	2.53CEOCA1KV	2.5	10.3	11.3	16.9	17.4	56	63	195	210
42CEOCA1KV	43CEOCA1KV	4.0	11.8	13.0	17.9	19.2	67	77	215	230
62CEOCA1KV	63CEOCA1KV	6.0	13.0	14.2	19.1	20.3	77	88	230	245
102CEOCA1KV	103CEOCA1KV	10	15.5	17.1	21.6	23.2	94	111	260	280
162CEOCA1KV	163CEOCA1KV	16	17.6	19.4	23.7	26.2	117	156	285	315

2C+E = 2 Core + Earth. 3C+E = 3 Core + Earth.

PVC MULTICORE SWA CIRCULAR 0.6/1KV

Cable description:

4 Core plus Insulated Earth Circular Cable, Copper Conductor, V-90 PVC Insulated and PVC Bedded, Steel Wire Armoured, 5V-90 PVC Sheathed, to AS/NZS 5000.1.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Diameter Over Bedding mm	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
1.54CEOCA1KV	1.5	10.9	17.0	59	205
2.54CEOCA1KV	2.5	12.3	18.5	71	225
44CEOCA1KV	4.0	14.4	20.5	87	245
64CEOCA1KV	6.0	15.8	21.9	102	265
104CEOCA1KV	10	19.0	25.8	145	310
164CEOCA1KV	16	21.6	28.4	184	340

◊ The cables listed above are available in Green Star approved PVC or made to order Non PVC Low Smoke Zero Halogen.

◊ The cables listed above are available in Green Star approved PVC or made to order Non PVC Low Smoke Zero Halogen.

PRYSMIAN

It's that easy.

Doing business the Prysmian way.

Doing business with us should be like having the pie and eating it. And the best way to get there is to listen to you. Based on your feedback we constantly improve. Increased stock availability, quicker quote responses, improved labelling and reliable deliveries are just some examples that'll simplify your daily life. Care for another slice?

A brand of the

Prysmian Group

SOLAR CABLES

Technical data:

Fire behaviour	**Fire performance**	IEC 60332-1
	Smoke density	IEC 61034, EN 50268-2
	Halogen Acid Gas Emission	IEC 670754-1, EN 50267-2-1
Electrical parameters	**Rated voltage**	(Uo/U) 600/1000V AC
	Test voltage	6500 V AC/15000 V/5 min
Thermal parameters	**Ambient temperature**	-40°C up to +90°C
	Maximum permissable conductor operating temperature	+120°C

SINGLE CORE SOLAR CABLES

Cable description:

Single core class 5 conductor designed in accordance with IEC 60228 (VDE 0295).

Item	**Specifications**	
	4 mm²	**6 mm²**
Product code	5749083	5749090
Cross-section area (mm²)	4 mm²	6 mm²
Material	Stranded tinned copper	
Conductor diameter	2.4	5.7
Insulation material	HEPR 120°C similar to IEC 60502-1	
Sheath material	XLEVA rubber 120°C	
Overall diameter of cable	5.2	5.7
Approx. net weight	58	76
Minimum bending radius	≥ 4 x cable OD	
Sheath colours	Black, blue, red	

TWIN SOLAR CABLES

Cable description:

Dual core class 5 conductor.

Item		Specifications	
		4 mm²	**6 mm²**
Product code		5749045	5749069
Conductor	**Cross-section area (mm²)**	2 x 4 mm²	2 x 6 mm²
	Material	Stranded tinned copper	
	Size (mm)	2 x (56/0.30 ± 0.008)	2 x (84/(0.30 ± 0.008))
	Size OD (mm)	2.59 ± 0. 3.12 ± 0.05 01	3.12 ± 0.05
Insulation	**Material**	Electron-beam cross-linked materials	
	Nominal OD (mm)	4.45 ± 0.15	4.80 ± 0.15
	Colour	One red, one black	
Sheath	**Material**	Electron-beam cross-linked materials	
	Nominal OD (mm)	5.80 ± 0.10 x 12.00 ± 0.20	6.45 ± 0.25 x 13.40 ± 0.35
	Colour	Black	
Resistance values	**Conductor resistance**	≤ 5.09Ω/km at 20°C	≤ 3.39Ω/km at 20°C
	Insulation resistance	≤ 1014Ω/km at 20°C	
	UV resistance	> 720 hours	

PRYSMIAN

Flexitime!

Our flexible cables save you time and money.

NCS INTERNATIONAL CERTIFIED PRODUCT

With our improved range of flexible cables we've brought flexibility to a completely new level. From now on it'll be a lot easier to get into those tight corners with less equipment, less people and in half the time. With a 50% decrease in installation time, imagine what you could do with those savings ...

A brand of the Prysmian Group

XLPE Cables

FLEXIBLE XLPE COPPER SDI 0.6/1KV

Cable description:

Flexible Single Core Cable, Class 5 Conductor, 5V-90 X-90 XLPE Insulated, PVC Sheathed, to AS/NZS 5000.1.
Note: For fixed installation.

Product Code	Conductor		Cable				Min. Installed Bending Radius mm
	Nominal C.S.A. mm^2	Nominal Diameter mm	Nominal Insulation Thickness mm	Overall Diameter		Approx. Mass kg/100m	
				Minimum mm	Maximum mm		
351CFF90	35	7.7	0.9	11.9	12.7	38.7	76
501CFF90	50	9.3	1.0	13.7	14.5	53.5	87
701CFF90	70	11.1	1.0	15.7	16.5	72.9	99
951CFF90	95	12.8	1.0	17.5	18.4	94.2	110
1201CFF90	120	14.5	1.2	19.4	20.3	118.6	122
1501CFF90	150	16.3	1.4	21.7	22.7	147.4	136
1851CFF90	185	18.0	1.6	23.8	24.8	178.0	149
2401CFF90	240	20.8	1.7	26.9	28.0	231.8	168
3001CFF90	300	23.4	1.8	29.8	30.9	288.3	186
4001CFF90	400	26.8	2.0	33.8	35.0	376.2	210
5001CFF90	500	30.3	2.2	37.8	39.1	474.5	235
6301CFF90	630	35.1	2.4	43.2	44.6	628.9	268

FLEXIBLE XLPE COPPER SDI 0.6/1KV

Cable description:

Flexible Single Core Cable, Class 5 Conductor, RE-110 Insulated, HFS-110-TP Sheathed, LSOH, to AS/NZS 5000.1.
Note: For fixed installation.

Product Code	Conductor		Cable				Min. Installed Bending Radius mm
	Nominal C.S.A. mm²	Nominal Diameter mm	Nominal Insulation Thickness mm	Overall Diameter		Approx. Mass kg/100m	
				Minimum mm	Maximum mm		
351CFF110	35	7.7	1.2	12.5	13.3	40.3	80
501CFF110	50	9.3	1.4	14.5	15.3	55.9	92
701CFF110	70	11.1	1.4	16.4	17.2	75.0	103
951CFF110	95	12.8	1.6	18.6	19.4	97.9	116
1201CFF110	120	14.5	1.6	20.2	21.1	122.0	127
1501CFF110	150	16.3	1.8	22.6	23.6	151.1	141
1851CFF110	185	18.0	2.0	24.8	25.8	183.1	155
2401CFF110	240	20.8	2.2	28.2	29.3	239.0	176
3001CFF110	300	23.4	2.4	29.9	31.1	290.0	186
4001CFF110	400	26.8	2.6	35.2	36.5	386.2	219
5001CFF110	500	30.3	2.8	39.3	40.6	485.7	244
6301CFF110	630	35.1	2.8	44.1	45.6	637.3	273

XLPE COPPER SDI 0.6/1KV

Cable description:

Single Core Cable, Class 2 Conductor, Copper Conductor, X-90 XLPE Insulated, 5V-90 PVC Sheathed, to AS/NZS 5000.1.
Note: Non Compacted Conductor except otherwise stated.

Catalogue Reference	Nominal Conductor Area mm²	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
16CUXLP	16	9.5	21	40
25CUXLP	25	11.2	31	45
35CUXLP	35	12.4	41	50
50CUXLP	50	13.9	54	55
70CUXLP	70	15.8	73	65
95CUXLP	95	17.9	100	75
120CUXLP	120	19.6	124	80
150CUXLP	150	21.9	153	90
185CUXLP	185	24.1	190	100
240CUXLP	240	27.1	246	165
300CUXLP	300	30.0	307	180
400CUXLP	400	33.5	388	200
*500CCUXLP	*500	35.2	489	280
*630CCUXLP	*630	39.7	625	315

* Compacted Conductor.
Note: LSOH version available.

XLPE ALUMINIUM SDI 0.6/1KV

Cable description:

Single Core Cable, Aluminium Conductor, X-90 XLPE Insulated, 5V-90 PVC Sheathed, to AS/NZS 5000.1.

Note: Non Compacted Conductor except otherwise specified. *Compacted Conductor

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
25CALXLP*	25	10.9	15	85
35CALXLP*	35	11.9	18	95
50CALXLP*	50	13.1	23	105
70ALXLP	70	15.9	34	95
95ALXLP	95	18.0	45	108
120ALXLP	120	19.8	54	118
150ALXLP	150	21.9	67	131
185ALXLP	185	24.2	80	145
240ALXLP	240	27.2	103	163
300ALXLP	300	30.0	126	180
400ALXLP	400	33.6	159	201
500ALXLP	500	37.4	196	224
630ALXLP	630	42.3	252	254

Note: LSOH version available.

XLPE MULTICORE CIRCULAR 0.6/1KV

Cable description:

2 & 3 Core plus Earth Circular Cable, Copper Conductor, X-90 XLPE Insulated, 5V-90 PVC Sheathed, to AS/NZS 5000.1.
Note: Non Compacted Conductor.

Catalogue Reference		Nominal Conductor Area mm^2	Approx. Overall Diameter mm		Approx. Mass kg/100m		Min. Installed Bending Radius mm	
2C+E	3C+E		2C+E	3C+E	2C+E	3C+E	2C+E	3C+E
252CEXLP		25	21.0		75.4		85	
	253CEXLP	25		22.4		102		90
	353CEXLP	35		25.0		136		150
	503CEXLP	50		28.5		183		170
	703CEXLP	70		33.0		254		200
	953CEXLP	95		37.0		336		220
	1203CEXLP	120		41.0		422		245
	1503CEXLP	150		46.0		525		275
	1853CEXLP	185		51.6		665		310
	2403CEXLP	240		58.1		868		350
	3003CEXLP	300		64.4		1084		385

2C+E = 2 Core + Earth. 3C+E = 3 Core + Earth.

Note: LSOH version available.

XLPE MULTICORE CIRCULAR 0.6/1KV

Cable description:

4 Core & 4 Core plus Earth Circular Cable, Copper Conductor, X-90 XLPE Insulated, 5V-90 PVC Sheathed, to AS/NZS 5000.1.
Note: Non Compacted Conductor.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
164CEXLP	16	21.0	87.5	85
254CEXLP	25	24.9	130	150
354CEXLP	35	27.8	173	165
504CEXLP	50	32.0	235	190
704CEXLP	70	37.1	325	225
954CEXLP	95	41.8	437	250
1204CEXLP	120	46.2	547	280
1504CEXLP	150	52.0	680	310
1854CEXLP	185	58.3	857	350
2404CEXLP	240	65.8	1122	395
3004CEXLP	300	72.9	1400	440

XLPE MULTICORE SWA CIRCULAR 0.6/1KV

Cable description:

3 Core plus Earth Circular Cable, Copper Conductor, X-90 XLPE Insulated, PVC Bedded, Steel Wire Armoured, 5V-90 PVC Sheathed, to AS/NZS 5000.1.
Note: Non Compacted Conductor.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Diameter Over Bedding mm	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
253CEXLPA	25	21.4	28.2	187	340
353CEXLPA	35	24.0	30.8	229	370
503CEXLPA	50	27.5	34.5	291	415
703CEXLPA	70	31.8	40.0	406	480
953CEXLPA	95	35.6	44.0	504	530
1203CEXLPA	120	39.3	47.9	608	575
1503CEXLPA	150	44.4	54.4	783	655
1853CEXLPA	185	49.6	59.8	949	720
2403CEXLPA	240	56.4	67.0	1198	805
3003CEXLPA	300	62.3	73.3	1447	880

Note: LSOH version available.

XLPE MULTICORE SWA CIRCULAR 0.6/1KV

Cable description:

4 Core plus Earth Circular Cable, Copper Conductor, X-90 XLPE Insulated, PVC Bedded, Steel Wire Armoured, 5V-90 PVC Sheathed, to AS/NZS 5000.1.

Note: Non Compacted Conductor.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Diameter Over Bedding mm	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
254CEXLPA	25	23.8	30.6	223	370
354CEXLPA	35	26.8	33.8	278	405
504CEXLPA	50	30.8	38.8	379	465
704CEXLPA	70	35.7	44.1	493	530
954CEXLPA	95	40.0	48.6	624	585
1204CEXLPA	120	44.6	54.6	804	655
1504CEXLPA	150	50.0	60.4	970	725
1854CEXLPA	185	56.4	67.0	1184	805
2404CEXLPA	240	63.5	74.5	1487	895
3004CEXLPA	300	70.2	81.6	1804	980

Note: LSOH version available on request.

Instrumentation Cables

INFORM@X®

Cable description:

P50-P56 cables are intrinsically safe electrically to as 2380.7 & AS 2381.7. Construction design standard according to EN 50288-7. Instrumentation cables are used in a broad range of operational conditions, they are primarily allocated to control applications where optimal protection from electrical noise is required. These cables can be used for digital and analogue data transmission at 110V in PLC and SCADA systems.

P50 Instrumentation - Overall Screen (CS)

Product Code	Pairs	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5001CS	1	6.8	-	41	-	70	-	55	-
P5002CS	2	10.3	14.4	62	173	140	1390	121	344
P5004CS	4	11.8	16.6	71	200	280	2060	162	516
P5006CS	6	14.0	18.8	84	226	420	2520	196	631
P5008CS	8	14.4	19.3	87	231	560	2950	256	679
P5010CS	10	17.5	23.1	105	277	700	3360	304	972
P5012CS	12	18.0	23.6	108	284	840	4010	344	1031
P5016CS	16	19.9	25.6	120	307	1120	5060	431	1178
P5020CS	20	22.1	27.7	132	332	1400	6180	519	1343
P5024CS	24	25.0	30.6	150	367	1680	6960	634	1544
P5036CS	36	28.5	35.0	171	420	2520	9450	882	2153

P50 Instrumentation - Element And Overall Screen (ESCS)

Product Code	Pairs	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5002ESCS	2	11.5	15.6	69	187	140	1550	146	391
P5004ESCS	4	13.3	18.1	80	218	280	2310	200	598
P5006ESCS	6	16.4	21.4	98	256	420	2890	266	772
P5008ESCS	8	16.8	21.7	101	261	560	3390	312	831
P5010ESCS	10	19.7	25.3	118	304	700	4170	384	1129
P5012ESCS	12	20.3	25.9	122	311	840	4980	437	1203
P5016ESCS	16	22.5	28.2	135	338	1120	5900	551	1393
P5020ESCS	20	25.4	31.1	153	373	1400	6860	691	1618
P5024ESCS	24	28.3	34.7	170	417	1680	8000	814	2084
P5036ESCS	36	32.4	39.3	194	471	2520	11160	1141	2626

P51 Instrumentation - Overall Screen (CS)

Product Code	Pairs	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5102ES	1 Pair	8.1	12.4	48	149	210	1390	85	265
P5103ES	1 Triple	8.5	12.9	51	155	315	1480	107	309

P53 Instrumentation - Overall Screen (CS)

Product Code	Triples	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5304CS	4	13.4	18.2	80	219	420	2520	212	610
P5306CS	6	16.5	21.5	99	258	630	3150	297	803
P5312CS	12	20.1	25.7	121	309	1260	5450	471	1233
P5316CS	16	22.3	28.0	134	335	1680	6570	596	1435
P5336CS	36	32.1	38.9	192	467	3780	13480	1249	2698

P53 Instrumentation - Element And Overall Screen (ESCS)

Product Code	Triples	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5304ESCS	4	15.2	19.5	91	234	420	2920	266	680
P5306ESCS	6	18.1	23.7	109	285	630	3940	346	1034
P5308ESCS	8	18.6	24.2	112	291	840	4980	399	1105
P5312ESCS	12	22.6	28.2	135	338	1260	6470	562	1405
P5316ESCS	16	25.5	31.2	153	374	1680	8050	739	1683
P5336ESCS	36	36.2	43.1	217	517	3780	15360	1504	3140

P55 Instrumentation - Overall Screen (CS)

Product Code	Pairs	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5502CS	2	12.4	17.3	75	207	420	1900	193	547
P5504CS	4	14.5	19.3	87	231	840	2700	272	686
P5506CS	6	17.9	23.5	107	282	1260	3430	373	1059
P5508CS	8	18.4	24.0	110	288	1680	4360	436	1141
P5510CS	10	21.6	27.2	130	327	2100	5320	536	1340
P5512CS	12	22.3	27.9	134	335	2520	5950	617	1458

P55 Instrumentation - Element And Overall Screen (ESCS)

Product Code	Pairs	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5502ESCS	2	13.3	18.1	80	217	420	2140	215	589
P5504ESCS	4	16.7	21.6	100	260	840	3090	331	803
P5506ESCS	6	19.9	25.6	120	307	1260	4200	426	1173
P5508ESCS	8	20.4	26.1	123	313	1680	5360	501	1266
P5510ESCS	10	24.5	30.2	147	362	2100	6180	640	1546
P5512ESCS	12	25.3	31.0	152	372	2520	6960	736	1662

P56 Instrumentation - Overall (Cs) Or Element And Overall Screen (ESCS)

Product Code	Pairs	Nominal O.D		Min. Bending Radius		Max. Pulling Tension		Approx.Mass	
		Plain	SWA	Plain	SWA	Plain	SWA	Plain	SWA
		mm	mm	mm	mm	N	N	kg/km	kg/km
P5604CS	4	17.1	22.0	102	264	1260	1260	390	868
P5606CS	6	20.4	26.1	122	313	1890	1890	512	1272
P5612CS	12	25.4	31.1	153	373	3780	3780	957	1816
P5604ESCS	4	18.3	24.0	110	288	1260	1260	425	1073
P5606ESCS	6	22.0	27.6	132	332	1890	1890	556	1380
P5612ESCS	12	28.1	34.5	168	414	3780	3780	989	2234

Electrical Characteristics - P31 Data

Cable Type	Units	P50 CS	P50 ESCS	P51 ES	P53 CS	P53 ESCS	P55 CS	P55 ESCS	P56 CS
Conductor Size	mm	0.5	0.5	1.5	0.5	0.5	1.5	1.5	1.5
Conductor Resistance at 20°C	ohms/100m	3.84	3.84	1.36	3.84	3.84	1.36	1.36	1.36
Insulation Resistance at 20°C	mohms/km	10	10	10	10	10	10	10	10
Max Continuous Current Rating	A	3.2	3.2	12	3.2	3.2	12	12	12
Max D.C. Voltage Withstand	kV	3	3	3	3	3	3	3	3
Capacitance of pairs	pF/m	250	250	250	-	-	250	250	-
Capacitance Unbalanced between pairs	pF/100m	100	100	-	-	-	100	100	-
L/R Ratio	μH/ohms	25	25	40	25	25	40	40	40

GLOSSARY OF TERMS - INSTRUMENTATION CABLES

Core: An insulated wire

Pair: Two cores twisted together (white & black)

Triple: Three cores twisted together (red, white and black)

Element: An assembly of cores, either paired or tripled

Drain wire: A bare tinned copper wire (7/0.25mm)

Screen: A metallic covering which may be applied over an element or a cabled assembly

SCADA: Supervisory control and data acquisition

PLC: Programmable logic control

Noise: Electrically generated interference causing signal distortion or loss

EMI (EMF): Electromagnetic interference

RFI: Radio frequency interference

Cross Talk: Interference between pairs of a cable or from one cable to another cable.

Capacitance: The ability of a cable or system to store an electric charge.

Element Screened (ES) or Individual Screened: Each element having a drain wire and screen applied

Composite Screen (CS) or Overall Screened: A cable where each element is UNSCREENED but a drain wire and screen is applied over the laid up elements

ElementScreened/Composite Screened (ES/CS) Individual and Overall Screened: Each element is screened and an overall screen is applied over the laid up assembly

Analogue Signal: Any continuous signal for which the time varying feature of the signal is a representation of some other time varying quantity, i.e., analogous to another time varying signal

Digital Signal: a physical signal that is a representation of a sequence of discrete values, for example of an arbitrary bit stream, or of a digitized analogue signal

Control Cables

1.5MM² MULTICORE PVC CONTROL 0.6/1KV

Cable description:

Multicore Circular with Earth, 1.5mm² Copper Conductor, V-90 PVC Insulated and 5V-90 Sheathed Control Cable, to AS/NZS 5000.1.

Catalogue Reference	No. Of Power Cores	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
1.52CECON	2	10.1	15	40
1.53CECON	3	10.9	18	45
1.54CECON	4	11.9	21	50
1.55CECON	5	13.5	23	55
1.56CECON	6	13.5	25	55
1.57CECON	7	14.4	28	60
1.58CECON	8	15.4	31	60
1.510CECON	10	16.6	36	65
1.512CECON	12	17.3	41	70
1.515CECON	15	19.2	49	75
1.520CECON	20	21.1	61	85
1.525CECON	25	23.3	73	95
1.530CECON	30	24.6	85	100
1.540CECON	40	28.0	110	170
1.550CECON	50	31.4	135	190

2.5MM² MULTICORE PVC CONTROL 0.6/1KV

Cable description:

Multicore Circular with Earth, 2.5mm² Copper Conductor, V-90 PVC Insulated and 5V-90 PVC Sheathed Control Cable, to AS/NZS 5000.1.

Catalogue Reference	No. Of Power Cores	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
2.52CECON	2	11.3	20	50
2.53CECON	3	12.3	25	50
2.54CECON	4	13.3	30	60
2.55CECON	5	15.0	31	60
2.56CECON	6	15.0	36	60
2.57CECON	7	16.1	39	70
2.58CECON	8	17.2	43	80
2.510CECON	10	18.6	50	80
2.512CECON	12	19.5	58	80
2.515CECON	15	21.6	70	90
2.520CECON	20	23.8	89	100
2.525CECON	25	26.3	107	160
2.530CECON	30	27.4	124	170
2.540CECON	40	32.0	163	200
2.550CECON	50	35.9	201	220

Note: LSOH version available on request.

1.5MM² MULTICORE PVC CONTROL SWA 0.6/1KV

Cable description:

Multicore Circular with Earth, 1.5mm² Copper Conductor, V-90 PVC Insulated and PVC Bedded, Steel Wire Armoured, 5V-90 PVC Sheathed Control Cable, to AS/NZS 5000.1.

Catalogue Reference	No. Of Power Cores	Approx. Diameter Over Bedding mm	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
1.52CECONA	2	9.1	15.2	48	190
1.53CECONA	3	9.9	16.1	52	200
1.54CECONA	4	10.9	17.0	59	210
1.55CECONA	5	12.4	18.5	65	230
1.56CECONA	6	12.4	18.5	66	230
1.57CECONA	7	13.4	19.5	73	250
1.58CECONA	8	14.4	20.5	79	260
1.510CECONA	10	15.6	21.7	87	260
1.512CECONA	12	16.3	22.4	94	270
1.515CECONA	15	18.2	24.3	108	290
1.520CECONA	20	20.1	26.9	141	340
1.525CECONA	25	22.3	29.1	160	350
1.530CECONA	30	23.1	29.9	175	370
1.540CECONA	40	27.1	34.1	216	410
1.550CECONA	50	30.3	38.5	280	460

2.5MM² MULTICORE PVC CONTROL SWA 0.6/1KV

Cable description:

Multicore Circular with Earth, 2.5mm² Copper Conductor, V-90 PVC Insulated and PVC Bedded, Steel Wire Armoured, 5V-90 PVC Sheathed Control Cable, to AS/NZS 5000.1.

Catalogue Reference	No. Of Power Cores	Approx. Diameter Over Bedding mm	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
2.52CECONA	2	10.3	16.4	57	200
2.53CECONA	3	11.3	17.4	65	210
2.54CECONA	4	12.3	18.4	72	220
2.55CECONA	5	14.0	20.1	80	240
2.56CECONA	6	13.5	19.6	82	240
2.57CECONA	7	15.1	21.2	95	260
2.58CECONA	8	16.2	22.3	103	270
2.510CECONA	10	17.6	23.7	109	290
2.512CECONA	12	18.5	25.3	133	300
2.515CECONA	15	20.6	27.4	151	330
2.520CECONA	20	22.8	29.6	183	360
2.525CECONA	25	25.3	32.3	207	390
2.530CECONA	30	26.4	33.4	234	400
2.540CECONA	40	30.9	39.1	313	470
2.550CECONA	50	34.6	43.0	361	520

Note: LSOH version available on request.

Aerial Cables

PVC AERIAL 0.6/1KV

Cable description:

Single Core Aerial Cable, Hard Drawn Copper Conductor, V-90 PVC Insulated, Unsheathed, to AS/NZS5000.1.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
		Single Core		
61CAER	6.0	5.2	8	20
101CAER	10	6.2	12	20
161CAER	16	7.2	18	30
251CAER	25	9.3	28	40
351CAER	35	10.2	38	40
501CAER	50	11.9	51	50
701CAER	70	13.7	72	60
951CAER	95	15.9	98	60

PVC ALUMINIUM AERIAL 0.6/1KV

Cable description:

Single Core Cable,All Aluminium Conductor, 5V-90 PVC Insulated, Unsheathed, to AS/NZS 5000.1.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
25AAER [NAMU]	24.5	8.9	12.6	36
50AAER [KUTU]	49.5	12.0	23.9	72
63AAER [FLY]	63.6	13.3	28.5	80
73AAER [RANGO]	73.6	14.4	34.0	86
106AAER [WASP]	106	16.8	44.8	101
109AAER [BEETLE]	109	16.8	44.9	101
122AAER [WEKE]	122	17.7	51.9	106
167AAER [WETA]	167	20.7	67.1	124

PVC AERIAL PARALLEL WEBBED 0.6/1KV

Cable description:

2 Core Parallel Webbed Aerial Cable, Hard Drawn Copper Conductor, V-90 PVC Insulated, Unsheathed, to AS/NZS 5000.1.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
		2 Core		
6FIG8AER	6.0	11.2x5.2	15	20
16FIG8AER	16	15.3x7.2	37	30

PVC TWISTED AERIAL 0.6/1KV

Cable description:

2, 3 & 4 Core Twisted Aerial Cable, Hard Drawn Copper Conductor, V-90 PVC Insulated, Unsheathed, to AS/NZS 5000.1.

Catalogue Reference	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	Min. Installed Bending Radius mm
		2 Core		
62CTAER	6.0	10.3	15	60
102CTAER	10	12.3	24	70
162CTAER	16	14.4	37	90

Firestop Cables

Afumex™
The Safe Choice

MULTICORE FIRESTOP FS90 0.6/1KV

Cable description:

Multicore Circular, Copper Conductor, Mica Glass Taped, X-90 XLPE Insulation, HFS-90-TP Sheathed, 0.6/1kV, to AS/NZS 5000.1 and AS/NZS 3013 WS Rating.

Code	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	AS/NZS 3013 WS Rating
		2 Core		
*1.02CFS90	1.0	11.3	16	WS51W
1.52CFS90	1.5	11.9	18	WS52W
2.52CFS90	2.5	12.9	22	WS52W
		2 Core + Earth		
1.52CEFS90	1.5	11.9	19	WS52W
2.52CEFS90	2.5	13.4	25	WS52W
42CEFS90	4.0	14.2	29	WS52W
62CEFS90	6.0	15.3	35	WS52W
		3 Core		
1.03CFS90	1.0	11.9	17	WS51W
1.53CFS90	1.5	12.5	20	WS52W
2.53CFS90	2.5	13.6	25	WS52W
		3 Core + Earth		
1.53CEFS90	1.5	13.4	23	WS52W
2.53CEFS90	2.5	14.6	29	WS52W
43CEFS90	4.0	15.6	35	WS52W
63CEFS90	6.0	16.8	43	WS52W
		4 Core		
*1.04CFS90	1.0	12.9	20	WS51W
1.54CFS90	1.5	13.6	23	WS52W
2.54CFS90	2.5	14.8	30	WS52W
		4 Core + Earth		
1.54CEFS90	1.5	14.6	26	WS52W
2.54CEFS90	2.5	16.0	34	WS52W
44CEFS90	4.0	16.8	42	WS52W
64CEFS90	6.0	18.5	53	WS52W
		6 Core + Earth		
1.56CFS90	1.5	16.1	28	WS52W
1.56CEFS90	1.5	16.1	29	WS52W
2.56CEFS90	2.5	17.6	39	WS52W
		7 Core		
1.57CFS90	1.5	16.1	29	WS52W
		10 Core + Earth		
1.510CEFS90	1.5	20.2	42	WS52W
2.510CEFS90	2.5	22.2	57	WS52W
		20 Core + Earth		
1.520CEFS90	1.5	25.7	72	WS52W
2.520CEFS90	2.5	28.4	99	WS52W

* Meets CAT 3 Data Transmission Characteristics.

Afumex™
The Safe Choice

FIRESTOP FS90 FLAT 250/450V & 0.6/1KV

Cable description:

Figure 8, Copper Conductor, Mica Glass Taped, XLPE Insulation, HFS-90-TP Sheathed, to AS/NZS 5000.1 and AS/NZS 3013 WS Rating.

Code	Nominal Conductor Area mm^2	Approx. Overall Dimensions mm	Approx. Mass kg/100m	AS/NZS 3013 WS Rating
		2 CORE 250/450V		
*1.02CFF90LD	1.0	5.5x9.0	7.2	WS51W
*1.52CFF90LD	1.5	5.7x9.6	8.5	WS51W
		2 CORE 0.6/1KV		
*1.02CFF90HD	1.0	7.7x11.2	10.3	WS52W
*1.52CFF90HD	1.5	8.0x11.8	12.0	WS52W

* Complies to AS/ACIF S 008.

SINGLE CORE FIRESTOP FS110 0.6/1KV

Cable description:

Single Core Circular, Copper Conductor, Mica Glass Taped, R-HF-110 Insulation, HF-110-R Sheathed, to AS/NZS 5000.1.

Code	Nominal Conductor Area mm^2	Approx. Overall Diameter mm	Approx. Mass kg/100m	AS/NZS 3013 WS Rating
101CFS110	10	9.9	1.9	WS51W
161CFS110	16	10.9	25	WS52W
251CFS110	25	13.1	38	WS52W
351CFS110	35	14.2	47	WS52W
501CFS110	50	16.0	62	WS52W
701CFS110	70	17.6	82	WS52W

FLEXIBLE SINGLE CORE FIRESTOP FS110 0.6/1KV

Cable description:

Flexible Single Core Circular, Class 5 Conductor, Mica Glass Taped Fire Barrier XHF-110, HFS-110-TP Sheathed, Colour Red, to AS/NZS 5000.1 and AS/NZS 3013 WS Rating.

Code	Nominal C.S.A. mm^2	Nominal Cable O.D.	Approx. Mass kg/100m	AS/NZS 3013 WS Rating
251CFFFS110	25	13.7	36.0	WS52W
351CFFFS110	35	14.8	46.0	WS52W
501CFFFS110	50	16.4	61.0	WS52W
701CFFFS110	70	18.2	81.0	WS52W
951CFFFS110	95	20.1	103.0	WS52W
1201CFFFS110	120	21.8	128.0	WS52W
1501CFFFS110	150	24.0	157.0	WS52W
1851CFFFS110	185	26.1	189.0	WS52W
2401CFFFS110	240	29.3	245.0	WS52W
3001CFFFS110	300	32.2	303.0	WS52W
4001CFFFS110	400	36.3	394.0	WS52W
5001CFFFS110	500	40.4	495.0	WS52W
6301CFFFS110	630	45.9	654.0	WS52W

PRYSMIAN

Afumex™
The Safe Choice

MULTICORE FIRESTOP FS110 0.6/1KV

Cable description:

Multicore Circular, Copper Conductor, Mica Glass Taped, R-HF-110 Insulation, HF-110-R Sheathed, to AS/NZS 5000.1 and AS/NZS 3013 WS Rating.

Code	Nominal Conductor Area mm²	Approx. Overall Diameter mm	Approx. Mass kg/100m	AS/NZS 3013 WS Rating
		3 Core + Earth		
103CEFS110	10	20.1	75	WS52W
163CEFS110	16	22.4	100	WS52W
253CEFS110	25	27.0	144	WS52W
353CEFS110	35	29.2	183	WS52W
503CEFS110	50	33.3	244	WS52W
703CEFS110	70	37.4	325	WS52W
953CEFS110	95	42.3	429	WS52W
1203CEFS110	120	46.0	527	WS52W
1503CEFS110	150	51.1	651	WS52W
1853CEFS110	185	56.4	818	WS52W
2403CEFS110	240	63.8	1066	WS52W
		4 Core + Earth		
104CEFS110	10	22.2	94	WS52W
164CEFS110	16	24.8	126	WS52W
254CEFS110	25	30.0	183	WS52W
354CEFS110	35	33.0	222	WS52W
504CEFS110	50	37.4	315	WS52W
704CEFS110	70	42.0	419	WS52W
954CEFS110	95	47.2	550	WS52W
1204CEFS110	120	51.2	676	WS52W
1504CEFS110	150	57.2	837	WS52W
1854CEFS110	185	63.7	1063	WS52W
2404CEFS110	240	72.2	1386	WS52W

PRYSMIAN

Safe even when the alarm goes off.

Firestop™ is there when you need it the most.

It's when the flames consume everything around them and the heat becomes intolerable that our fire-resistance cable, Firestop™, displays its best qualities. In intense heat conditions it continues to supply all the critical functions such as fire alarm, emergency lighting and fans. Low smoke and halogen-free – like all the other cables in our Afumex series. Welcome to our safe and secure cable family, Firestop™.

A brand of the

Prysmian Group

VaSTEC™ EMC/VARIABLE SPEED DRIVE 0.6/1KV

Cable description:

1.5mm² & 2.5mm² cables are a flexible, 3 core and earth copper construction, X-90 XLPE insulated and 5V-90 PVC sheathed to AS/NZS 5000.1 incorporating a heavy duty tinned copper braid screen over metallised tape.

4.0mm² to 10mm² cable are a flexible, copper 3 core plus 3 split earth symmetrical construction, X-90 XLPE insulated and 5V-90 PVC sheathed to AS/NZS 5000.1 incorporating a heavy duty tinned copper braid screen over metallised tape.

Code	Nominal Conductor Area mm²	Nominal Combined Earth Area mm²	Overall Diameter mm		Weight kg/100m
			Min.	Max.	
1.5FXEMC*	1.5	1.5	11.7	12.7	21
2.5FXEMC*	2.5	2.5	11.9	13.3	27
4FXEMC	4.0	3.0	13.9	14.9	36
6FXEMC	6.0	3.0	15.7	16.7	46
10FXEMC	10	4.5	17.6	18.9	65

* Cable has only one earth with a cross section area equal to the phase conductor.

VaSTEC™ EMC/VARIABLE SPEED DRIVE 0.6/1KV

Cable description:

Rigid copper 3 core plus 3 split earth copper symmetrical construction, XLPE insulated and 5V-90 PVC sheathed to AS/NZS 5000.1 incorporating a copper tape screen over 5V-90 PVC bedding.

Code	Nominal Conductor Area mm²	Nominal Combined Earth Area mm²	Nominal Overall Diameter mm	Weight kg/100m
10REMC	10	4.5	19.5	60
16REMC	16	7.5	22	90
25REMC	25	12	25.6	130
35REMC	35	18	28.1	170
50REMC	50	30	31.6	220
70REMC	70	30	35.3	290
95REMC	95	48	39.9	390
120REMC	120	48	43.6	470
150REMC	150	75	48.8	590
185REMC	185	75	54.1	720
240REMC	240	105	60.8	930
300REMC	300	150	66.9	1160

Note: LSOH version available on request.

Other Special Cables

The energy cables in previous sections of this Guide, represent the common cables required in general markets. Prysmian however, manufacture a wide range of cables for "special markets" with specific demands. This includes:

Mining and Industrial Markets, where cables are generally elastomeric, and face tougher duties and higher safety requirements.

- Reeling and Trailing Cables to AS/NZS 1802 (Underground Coal Mining).
- Underground Feeder Cables to AS/NZS 1972, AS1026, AS/NZS1429.
- Machine Cables to AS/NZS 1972.
- Reeling and Trailing Cables to AS/NZS 2802.
- Composite trailing cables with fibre optics.
- Flat power and control cables.
- Festoon cables.

Marine Environments, where special materials have to be used to cope with hydraulic and saline conditions, and which are also required to perform exceptionally in case of fire (low smoke and toxic gas emission).

- Cables to AS/NZS 4193, IEC 60092-353, 60092-354, 60332 and other international standards.
- Cables for tough offshore oil and gas applications.

Transport Industry, where cables are stressed from heat, vibration and exposure to oils.

Defence Standards, where cables are required to many international specifications, and are installed in very tight conditions, and operate in environments of greater heat and vibration. Critical systems have to be heavily screened to cope with high requirements for electromagnetic radiation. Prysmian is proud to have been the preferred supplier to the RAN's Anzac Frigates and Collins Submarine projects.

If you have a special requirement which falls outside of these areas, please do not hesitate to contact the nearest Prysmian office. New cables are designed every day, and can also be sourced from the large global resources of the Prysmian Cable & Systems office Group.

Communication Cables

Communication Cables

Prysmian is a global market leader in optical and metallic cable systems for telecommunication. We supply a major share of the world's optical and metallic cable requirements, offering complete end-to-end passive optical systems. We are the largest manufacturer and supplier of Fibre Optic Cabling in the Australian and New Zealand Market and the only manufacturer of Telephone Cable in Australia.

Our range includes:

Fibre Cables:

- SM@RTCORE – reduced diameter multi loose tube cables. Available in 2 to 624F.
- SM@RTCORE CT – a cost effective central tube duct cable that offers the same tensile and crush strength as a traditional Loose Tube cable. Available to 24F.
- Ribbon Cables –Harness the power of mass fusion splicing. Available to 864F.
- Light and Heavy Duty Indoor/Outdoor Riser Cable – featuring LSZH sheath as standard. Available to 24F.
- Simplex and Duplex cord.
- ADSS – Aerial Cables. Available in 12 – 288F.
- Rodent Proof Cables – when rats are a problem. Available for all cables.
- FLEXTUBE – the future in duct cables. Small, flexible and very easy to install and terminate. Available in 72 – 1728F.

All our Cables include our award winning optic fibre, from our world class G652.D Single mode and G657A.2 Bend Bright XS, to a full range of cutting edge Multimode fibres. Prysmian leads the way in both fibre and fibre cable manufacture.

Metallic Cables:

- Full range of LAN cables.
- Internal Telephone/Cat 3 cables.
- External Telephone cables.
- xDSL/Station Cables.
- Jumper/Connecting wires.

We also manufacture and supply a cost effective range of fibre joints. Available in three different sizes for splice capacity up to 1728 fibres.

For full details on our Telecom/Datacom Cables please refer to our web site at: **www.prysmiancables.co.nz/telecom** or call **(09) 827 3109** or **0800 492 225** to speak to a Prysmian Product Specialist.

Cables Selection

Cable Selection

The following are some simplified procedures for cable selection. Refer to the Wiring Rules AS/NZS 3000 and AS/NZSS 3008.1.2 for detailed information. The four main electrical criteria for cable selection are:

a. Current rating.
b. Voltage drop.
c. Short-circuit capacity.
d. Earth loop impedance.

Generally speaking, for:

a. Short route length, current-carrying capacity requirement will dictate the cable size selection.
b. Long route length, voltage drop or earth loop impedance requirement will dictate the cable size selection.
c. The short-circuit capacity of a cable shall be such that all short-circuit current occurring at any point of a circuit shall not cause the cable conductor temperature to exceed the maximum permissible limit.

A) Current rating:

Current rating of a cable depends on:

a. Installation method, eg., In air or ground, enclosed or unenclosed, etc.
b. Installation environment, eg., ambient temperature, depth of laying, presence of other cables or circuits nearby, etc.
c. Limiting temperatures of the cables for normal use, eg., PVC and XLPE insulated cables are 75°C and 90°C respectively.
d. Type of overcurrent protective device used, appropriate derating factor:
   - 0.9 for fuses, e.g. AS/NZS 60269 series fuses, with $I_2 = 1.6 \times I_N$.
   Where: I_2 = conventional overcurrent fusing or tripping current.
   I_N = nominal current of the fuse or circuit breaker.
e. Current in neutral conductor.

"4 core" shall mean 3 phase cores plus one neutral core. 4 core cables can have the same current rating as 3 core cables only if the neutral core is lightly loaded, i.e. less than 35% of the rated current of the phase conductor, and the harmonic content in the current is not significant, e.g. less than 15% for 3rd and 10% for 9th, 12th, etc, higher harmonics. For other situations, de-rating may be required in order to take the additional heating effect due to the neutral current into consideration.

Current ratings in this technical manual are based on AS/NZSS 3008.1.2 with the following typical New Zealand installation conditions. If other installation conditions are necessary, refer to derating/rating factors in the General Information section or/and AS/NZSS 3008.1.2 for appropriate derating/rating factors.

- Not exposed to direct sunlight unless otherwise specified
- Single circuit
- Solar radiation (for cables exposed to sun only) = 1000W/m^2
- Ambient air temperature = 30°C
- Ambient soil temperature = 15°C
- Depth of laying* = 0.5m
- Soil thermal resistivity = 1.2°C.m/W
- Supply frequency = 50Hz

*Measured to (a) centre of cable or trefoil group of cables or
(b) centre of enclosure or trefoil group of enclosures

B) Voltage drop:

Wiring Rules in general stipulate a maximum voltage drop of 5% of the nominal voltage between the point of supply and any point in the installation when the conductors are carrying maximum demand. Voltage drops in this technical manual are based on:

a. Maximum conductor temperatures of 75°C, 90°C and 110°C as indicated
b. Load power factor to give maximum voltage drop
c. Single core cables are in trefoil or flat formation and touching or spaced apart
d. Supply frequency of 50Hz

Equation to determine minimum required cable size due to voltage drop

$$V_c = \frac{V_d \times 1000}{I \times L} \text{ millivolts/ampere metre}$$

Where:
- V_c Calculated maximum permissible voltage drop in millivolts/ampere metre
- V_d Maximum permissible voltage drop in volts
- I Current in Amperes
- L Route length in metres

Now select a cable such that V_c is equal to or less than the voltage drop value given in the relevant table, and check that it will carry the current.

C) Short-circuit capacity:

During a short-circuit, the conductor temperature will increase due to the heat energy produced. To satisfy this requirement, short-circuit permissible temperature limit of the conductor of cable must not be exceeded. This may require the time current curves of the short-circuit protective device to be checked against the cable damage curves.

D) Maximum earth loop impedance:

The earth loop impedance has to be low enough to allow sufficient current to flow in the fault loop to cause the protective device to operate and disconnect the supply within the specified time when a fault of negligible impedance occurs between an active and a protective earthing conductor. To accurately calculate the earth loop impedance is not easy and requires information of the HV supply system that may or may not be available. As the internal impedance of an earth loop may be expressed in terms of circuit length, a simplified method is listed below to provide a reasonably accurate calculation of the maximum route length to ensure correct operation of protective devices to provide protection against indirect contact:

$$L_{max} = \frac{0.8U_o\ SphSpe}{I_a\ \rho(Sph + Spe)}$$

Where:

- L_{max} Maximum route length (m).
- U_o Nominal phase voltage (230V).
- P Resistivity at normal working temperature ($\Omega.mm^2/m$).
  - $= 22.5 \times 10^{-3}$ for copper.
  - $= 36 \times 10^{-3}$ for aluminium.
- I_a (mean) trip current setting for the instantaneous operation of a circuit breaker (A) in the specified time; or the current that assures operation of the protective fuse (A); in the specified time.
- Sph Size of the active conductor (mm^2).
- Spe Size of the protective earthing conductor (mm^2).

Notes:

1. This method is only reliable where the conductors that make up the earth-fault-current loop are in close proximity to each other and are not separated by ferromagnetic materials.
2. This calculation method is considered valid for cable sizes up to 120mm^2. For larger sizes, maximum length and fault loop impedance should be calculated by other methods taking account of cable inductance.

Maximum Route Lengths, in metres, for different sizes of Conductors and Protective Devices using Mean Tripping Currents (I_a)* for a disconnection time of 0.4 sec.

Conductor Size mm²		Protective Device Rating Amps	Circuit-breaker (see Note 1) m			Fuses (see Note 2) m
Active	Earth		Type B	Type C	Type D	
1	1	6	170	91	55	204
1	1	10	102	55	33	114
1.5	1.5	10	153	82	49	170
1.5	1.5	16	96	51	31	82
2.5	2.5	16	160	85	51	136
2.5	2.5	20	128	68	41	93
4	2.5	25	126	67	40	90
4	2.5	32	98	52	31	70
6	2.5	40	90	48	29	60
10	4	50	117	62	37	73
16	6	63	142	76	45	85
16	6	80	112	59	36	59
25	6	80	124	66	40	66
25	6	100	99	53	32	47
35	10	100	159	85	51	75
35	10	125	127	68	41	58
50	16	125	198	106	63	90
50	16	160	155	83	50	71
70	25	160	235	126	75	108
70	25	200	188	100	60	84

Notes:

1. * I_a for circuit-breakers are mean tripping currents as follows:
   Type B = 4 times rated current.
   Type C = 7.5 times rated current.
   Type D = 12.5 times rated current.
2. Fuses based on AS/NZS 60269.1 also known as BS 88 type fuses.
3. When the nominal phase voltage of the electrical installation is not 230V, the maximum length may be determined by multiplying by a factor of $U_o/230$. For a nominal phase voltage of 240V, the factor would be approximately 1.04.
4. The above table is for guidance only. In many cases, other requirements such as loading, short circuit and voltage drop will need to be considered in the selection of active and earth conductor sizes.

PRYSMIAN

A perfect fit.

Cable solutions your way.

Your satisfaction is our livelihood. So it goes without saying – we tailor-make our cable solutions to fit your needs. To make sure our offer fits the bill we have both research centres and very skilled experts at your service.

A brand of the

Prysmian Group

Current Carrying Capacities & Voltage Drops

Current Ratings

CURRENT RATINGS 2 SINGLE CORE (CU) 75°C

Cable description:

2 Single Core LV, Non Flexible, Copper Conductor, Sheathed and Unsheathed Non-Armoured Cables with V-75, V-90, V-90HT PVC , HFI-75-TP or HFI-90-TP LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm^2	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Single Phase Voltage Drop (@ 50Hz & 75°C) mV/A.m
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation				
											∞
1.0	18	18	15	9	15	13	7	24	20	23	51.6
1.5	24	24	18	11	21	16	9	31	25	29	33.0
2.5	34	33	26	15	27	23	14	43	35	40	18.0
4	46	44	35	21	36	29	18	56	45	52	11.2
6	58	56	46	25	47	38	23	71	57	64	7.49
10	79	76	62	34	62	50	31	94	76	85	4.46
16	105	101	82	44	80	64	41	134	98	109	2.81
25	141	136	111	57	107	86	55	174	128	142	1.78
35	174	165	136	70	128	103	67	209	153	171	1.29
50	213	202	166	82	157	125	-	248	185	205	0.963
70	271	254	210	101	194	155	-	305	227	251	0.680
95	336	315	262	122	242	193	-	365	277	306	0.507
120	392	366	304	139	276	220	-	416	316	348	0.415
150	450	418	351	156	321	257	-	466	362	389	0.352
185	523	483	408	176	365	292	-	528	410	449	0.301
240	626	576	488	202	434	348	-	612	482	519	0.255
300	725	663	564	226	-	-	-	691	546	601	0.229
400	848	771	658	252	-	-	-	784	633	683	0.209
500	988	889	762	279	-	-	-	886	714	793	0.194
630	1156	1023	878	307	-	-	-	994	825	898	0.181

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 2 SINGLE CORE (CU) 90°C

Cable description:

2 Single Core LV, Non Flexible, Copper Conductor, Sheathed and Unsheathed Non-Armoured Cables with X-90 XLPE, R-EP-90 EPR, R-CPE-90, R-CSP-90, or R-HF-90 LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Single Phase Voltage Drop (@ 50Hz & 90°C) mV/A.m
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation				
											∞
1.0	22	22	18	13	18	14	9	21	21	26	54.0
1.5	29	28	22	17	23	18	11	28	28	32	34.6
2.5	40	40	31	23	33	26	15	39	39	44	18.9
4	53	52	41	31	42	33	21	49	49	57	11.8
6	67	66	52	40	52	42	26	62	62	71	7.86
10	92	90	72	53	72	57	35	83	83	93	4.68
16	123	119	95	70	92	74	47	149	107	120	2.94
25	166	160	129	95	124	99	64	192	140	156	1.87
35	205	195	158	116	149	119	79	230	168	187	1.35
50	251	238	194	140	183	146	-	273	202	226	1.01
70	320	300	246	176	224	180	-	335	249	276	0.710
95	397	372	306	217	281	224	-	401	305	331	0.528
120	464	432	358	252	321	256	-	457	348	383	0.431
150	535	496	413	288	362	289	-	514	391	429	0.365
185	622	574	480	333	426	340	-	581	453	495	0.311
240	746	684	574	395	507	406	-	674	532	574	0.262
300	866	790	666	454	-	-	-	761	601	663	0.233
400	1015	920	779	526	-	-	-	865	699	755	0.211
500	1186	1063	903	605	-	-	-	977	791	856	0.196
630	1387	1224	1045	692	-	-	-	1098	916	995	0.184

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 2 SINGLE CORE (AL) 90°C

Cable description:

2 Single Core LV, Aluminium Conductor, Sheathed and Unsheathed Non-Armoured Cables with X-90 XLPE, R-EP-90 EPR, R-CPE-90, R-CSP-90, or R-HF-90 LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Single Phase Voltage Drop (@ 50Hz & 90°C) mV/A.m
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation				
											∞
16	96	92	74	55	72	57	36	114	83	93	4.91
25	129	123	100	73	96	77	50	149	109	122	3.08
35	158	151	122	89	116	92	62	179	131	146	2.24
50	195	184	150	109	142	113	-	212	157	175	1.65
70	249	233	191	136	175	140	-	260	194	214	1.15
95	308	288	238	168	218	174	-	311	236	256	0.839
120	361	336	278	196	249	199	-	355	270	297	0.672
150	415	385	320	224	281	224	-	398	303	333	0.557
185	483	447	374	260	331	265	-	453	352	384	0.455
240	580	534	449	308	396	317	-	526	415	446	0.363
300	673	618	520	355	-	-	-	595	471	516	0.307
400	795	726	615	415	-	-	-	683	552	592	0.261
500	935	849	722	483	-	-	-	780	631	676	0.227
630	1103	994	849	562	-	-	-	891	744	792	0.204

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 2 SINGLE CORE (CU) 110°C

Cable description:

2 Single-Core LV, Non Flexible, Copper Conductor, Sheathed and Unsheathed Non-Armoured Cables with R-HF-110 or R-E-110 Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Single Phase Voltage Drop (@ 50Hz & 110°C) mV/A.m
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation				
											∞
1.0	27	26	21	18	21	17	11	22	24	28	57.4
1.5	34	33	27	22	27	21	14	28	31	35	36.8
2.5	48	47	39	32	37	30	19	38	42	49	20.1
4	63	62	50	42	49	40	25	51	56	63	12.5
6	80	78	63	54	62	49	32	64	70	78	8.35
10	110	106	87	73	83	66	43	85	93	103	4.97
16	147	140	114	95	111	89	57	163	122	135	3.12
25	196	187	153	127	147	117	77	210	157	173	1.99
35	241	229	188	156	177	141	94	252	188	207	1.43
50	295	279	230	190	219	175	-	299	227	250	1.07
70	373	351	291	240	273	218	-	367	278	305	0.751
95	464	434	363	296	343	275	-	441	340	373	0.555
120	540	504	422	343	395	317	-	501	388	424	0.453
150	622	578	486	395	460	368	-	563	445	475	0.382
185	720	668	564	457	528	422	-	637	506	548	0.323
240	862	795	674	544	636	509	-	740	595	636	0.271
300	999	917	781	627	-	-	-	836	687	736	0.240
400	1171	1068	913	730	-	-	-	952	782	837	0.216
500	1367	1236	1059	844	-	-	-	1079	887	976	0.199
630	1603	1427	1226	973	-	-	-	1217	1031	1108	0.185

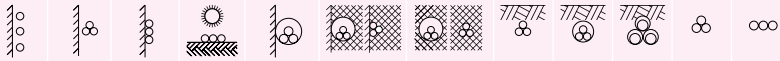
Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 3 SINGLE CORE (CU) 75°C

Cable description:

3 Single Core LV, Non Flexible, Copper Conductor, Sheathed and Unsheathed Non-Armoured Cables with V-75, V-90, V-90HT PVC, HFI-75-TP or HFI-90-TP LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Three Phase Voltage Drop (@ 50Hz & 75 °C) mV/A.m	
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation					
												
1.0	18	16	15	9	14	11	7	18	18	21	44.7	44.7
1.5	23	19	18	11	17	14	9	22	22	26	28.6	28.6
2.5	33	29	26	15	24	19	14	30	30	36	15.6	15.6
4	43	38	35	21	32	26	18	40	40	47	9.71	9.71
6	56	48	46	25	40	32	23	50	50	58	6.49	6.49
10	76	66	62	34	54	42	31	65	65	77	3.86	3.86
16	101	88	82	44	71	57	41	114	86	99	2.43	2.43
25	137	117	111	57	92	73	55	147	110	129	1.54	1.55
35	169	145	136	70	114	91	67	176	134	154	1.12	1.12
50	206	178	166	82	136	108	-	209	158	185	0.834	0.840
70	262	225	210	101	173	139	-	256	198	226	0.589	0.597
95	327	280	262	122	209	168	-	307	239	275	0.439	0.449
120	382	327	304	139	247	197	-	349	277	311	0.359	0.371
150	439	376	351	156	278	222	-	392	311	349	0.305	0.319
185	510	497	407	176	324	259	-	442	358	402	0.261	0.277

Note:
Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 3 SINGLE CORE (CU) 90°C

Cable description:

3 Single Core LV, Non Flexible, Copper Conductor, Sheathed and Unsheathed Non-Armoured Cables with X-90 XLPE, R-EP-90 EPR, R-CPE-90, R-CSP-90 or R-HF-90 LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Three Phase Voltage Drop (@ 50Hz & 90 °C) mV/A.m	
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation					
												
1.0	21	18	18	13	17	13	9	19	19	24	46.8	46.8
1.5	28	23	22	17	20	17	11	24	24	29	30.0	30.0
2.5	39	33	31	23	28	22	15	33	33	41	16.4	16.4
4	51	44	41	31	36	29	21	43	43	52	10.2	10.2
6	65	55	52	40	46	37	26	54	54	64	6.81	6.81
10	89	76	72	53	62	50	35	72	72	85	4.05	4.05
16	119	101	95	70	79	64	47	125	92	108	2.55	2.55
25	161	138	129	95	107	85	64	162	121	141	1.62	1.62
35	198	169	158	116	132	106	79	193	147	169	1.17	1.18
50	243	207	194	140	157	125	-	229	174	203	0.872	0.878
70	310	264	246	176	201	161	-	280	217	248	0.615	0.623
95	385	328	306	217	242	194	-	335	261	295	0.457	0.467
120	451	384	358	252	287	230	-	381	304	342	0.373	0.385
150	519	443	413	288	325	260	-	428	342	383	0.316	0.330
185	616	515	479	332	369	295	-	484	388	442	0.269	0.285
240	726	616	573	394	439	352	-	560	456	510	0.227	0.245
300	843	713	662	451	516	413	-	630	525	591	0.202	0.222
400	989	832	772	521	587	470	-	715	596	670	0.183	0.205
500	1156	961	893	598	696	557	-	805	693	756	0.170	0.193
630	1353	1111	1032	683	785	628	-	902	778	877	0.159	0.182

Note:
Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 3 SINGLE CORE (AL) 90°C

Cable description:

3 Single Core LV, Aluminium Conductor, Sheathed and Unsheathed Non-Armoured Cables with X-90 XLPE, R-EP-90 EPR, R-CPE-90, R-CSP-90, or R-HF-90 LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Three Phase Voltage Drop (@ 50Hz & 90 °C) mV/A.m	
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation					
												
16	92	78	74	55	62	50	36	97	71	85	4.25	4.25
25	124	107	100	73	83	66	50	125	93	110	2.67	2.67
35	154	131	122	89	102	83	62	150	113	131	1.94	1.94
50	188	161	150	109	122	98	-	178	135	157	1.43	1.44
70	241	205	191	136	156	125	-	217	169	193	0.997	1.00
95	298	255	238	168	188	151	-	260	203	229	0.727	0.733
120	350	298	278	196	223	178	-	296	236	265	0.582	0.589
150	403	344	320	223	252	201	-	332	266	296	0.482	0.491
185	470	402	373	259	287	230	-	377	303	343	0.394	0.404
240	564	482	448	308	343	275	-	438	356	397	0.314	0.327
300	656	559	519	354	405	323	-	495	412	460	0.266	0.281
400	776	659	613	414	466	373	-	567	473	525	0.226	0.243
500	912	773	717	481	560	448	-	646	556	598	0.197	0.216
630	1076	906	842	558	641	513	-	736	635	700	0.177	0.198

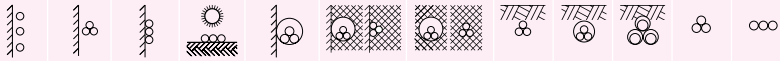
Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 3 SINGLE CORE (CU) 110°C

Cable description:

3 Single Core LV, Non Flexible, Copper Conductor, Sheathed and Unsheathed Non-Armoured Cables with R-HF-110 or R-E-110 Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Three Phase Voltage Drop (@ 50Hz & 110 °C) mV/A.m	
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation					
												
10	106	92	87	73	76	61	43	75	82	93	4.30	4.30
16	141	122	114	95	100	79	57	138	105	122	2.70	2.71
25	189	164	153	127	134	107	77	178	138	157	1.72	1.72
35	233	201	188	156	162	129	94	213	164	187	1.24	1.25
50	286	246	230	190	195	156	-	251	195	225	0.924	0.929
70	363	311	291	240	250	200	-	308	244	275	0.650	0.657
95	452	388	363	296	305	244	-	369	294	334	0.481	0.491
120	526	452	422	343	361	288	-	420	341	378	0.392	0.403
150	605	520	485	394	409	327	-	472	384	424	0.331	0.344
185	702	603	563	456	480	384	-	533	440	489	0.280	0.296
240	841	721	673	542	586	470	-	618	522	565	0.235	0.252
300	976	835	778	625	670	536	-	696	589	654	0.208	0.227
400	1144	974	906	725	768	615	-	791	669	752	0.187	0.208
500	1335	1127	1050	837	926	740	-	894	780	864	0.172	0.195
630	1564	1302	1211	961	1052	842	-	1004	877	975	0.160	0.184

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 2 CORE (CU) 75°C

Cable description:

2 Core LV, Non Flexible, Copper Conductor, Insulated and Sheathed (including neutral screened) Cables with or without Earth Conductor, Armoured or Non-Armoured Cables with V-75, V-90, V-90HT PVC, HFI-75-TP or HFI-90-TP LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed			Enclosed	Unenclosed Thermal Insulation		Buried Direct	Underground Wiring Enclosure	Single Phase Voltage Drop (@ 50Hz & 75 °C) mV/A.m
	Spaced	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation			
									
1.0	17	16	13	15	13	8	19	19	51.6
1.5	22	21	16	18	16	10	23	23	33.0
2.5	31	30	23	26	23	15	33	33	18.0
4	42	39	31	34	31	19	43	43	11.2
6	52	50	39	44	40	25	55	55	7.49
10	73	68	52	59	55	34	73	73	4.46
16	97	91	68	78	73	46	125	95	2.81
25	129	122	90	103	97	60	162	123	1.78
35	158	149	111	128	120	74	196	150	1.28
50	194	181	132	152	145	-	232	178	0.957
70	245	229	165	194	184	-	285	222	0.673
95	302	283	200	233	226	-	342	267	0.498
120	350	328	230	275	262	-	391	310	0.405
150	400	374	259	309	300	-	438	349	0.342
185	459	430	294	357	344	-	494	399	0.290
240	544	508	342	415	407	-	572	463	0.242
300	624	583	386	483	466	-	645	531	0.215
400	719	671	438	549	537	-	729	603	0.194
500	816	762	489	640	609	-	815	691	0.180

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 2 CORE (CU) 90°C

Cable description:

2 Core LV, Non Flexible, Copper Conductor, Insulated and Sheathed (including neutral screened) Cables with or without Earth Conductor, Armoured or Non-Armoured Cables with X-90 XLPE, R-EP-90 EPR, R-CPE-90, R-CSP-90, or R-HF-90 LSOH Insulation.
Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed			Enclosed	Unenclosed Thermal Insulation		Buried Direct	Underground Wiring Enclosure	Single Phase Voltage Drop (@ 50Hz & 90 °C) mV/A.m
	Spaced	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation			
									
1.0	20	19	17	18	15	10	20	20	54.0
1.5	26	24	21	22	20	12	26	26	34.6
2.5	37	34	30	31	28	18	36	36	18.9
4	50	46	40	41	36	23	48	48	11.8
6	63	58	51	51	46	30	60	60	7.85
10	86	80	69	69	64	40	80	80	4.68
16	114	107	91	90	86	54	141	105	2.94
25	154	144	122	121	116	73	182	137	1.86
35	190	178	150	145	142	89	219	165	1.35
50	232	217	182	178	174	-	261	198	1.00
70	295	275	229	220	220	-	321	244	0.703
95	364	340	281	275	272	-	385	299	0.520
120	424	395	325	314	316	-	439	340	0.423
150	485	452	370	365	361	-	492	391	0.354
185	560	520	424	415	417	-	556	442	0.299
240	664	618	499	493	494	-	645	519	0.249
300	763	710	570	575	568	-	728	597	0.219
400	884	820	653	656	656	-	825	677	0.197
500	1007	933	738	765	746	-	922	779	0.182

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 2 CORE (CU) 110°C

Cable description:

2 Core LV, Non Flexible, Copper Conductor, Insulated and Sheathed (including neutral screened) Cables with or without Earth Conductor, Armoured or Non-Armoured Cables with R-HF-110 or R-E-110 Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed			Enclosed	Enclosed and Unenclosed Thermal Insulation		Buried Direct	Underground Wiring Enclosure	Single Phase Voltage Drop (@ 50Hz & 110 °C) mV/A.m
	Spaced	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation			
									
1.0	25	24	21	20	16	12	21	23	57.4
1.5	31	30	27	26	20	15	27	30	36.8
2.5	44	42	39	35	29	20	37	41	20.1
4	59	55	50	48	39	28	49	54	12.5
6	74	70	63	60	48	35	61	68	8.34
10	102	95	87	81	64	48	83	90	4.95
16	135	126	114	109	87	63	154	118	3.12
25	180	169	152	142	114	85	199	153	1.97
35	220	208	186	178	142	104	240	186	1.43
50	269	253	226	214	171	-	284	220	1.06
70	336	319	284	274	219	-	350	276	0.745
95	419	393	349	334	268	-	420	332	0.548
120	487	456	403	394	315	-	479	385	0.445
150	555	520	459	446	356	-	537	434	0.372
185	640	598	525	520	416	-	607	496	0.313
240	758	708	621	629	503	-	705	587	0.259
300	872	813	710	717	574	-	796	664	0.226
400	1007	939	816	822	658	-	904	754	0.202
500	1149	1070	927	968	775	-	1014	868	0.185

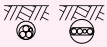
Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 3 & 4 CORE (CU) 75°C

Cable description:

3 & 4 Core LV, Non Flexible, Copper Conductor, Insulated and Sheathed (including neutral screened) Cables with or without Earth Conductor, Armoured or Non-Armoured Cables with V-75, V-90, V-90HT PVC, HFI-75-TP or HFI-90-TP LSOH Insulation.
Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed			Enclosed	Unenclosed Thermal Insulation		Buried Direct	Underground Wiring Enclosure	Three Phase Voltage Drop (@ 50Hz & 75 °C) mV/A.m
	Spaced	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation			
									
1.0	15	14	10	13	10	7	15	15	44.7
1.5	18	17	14	16	14	9	20	20	28.6
2.5	26	25	19	23	19	13	28	28	15.6
4	35	33	26	29	26	17	36	36	9.71
6	46	42	33	38	34	22	46	46	6.49
10	62	58	44	50	47	29	61	61	3.86
16	82	78	58	66	62	39	106	80	2.43
25	111	104	76	87	83	52	138	103	1.54
35	137	128	93	107	103	64	165	125	1.11
50	166	156	113	128	124	-	196	150	0.829
70	211	196	140	162	157	-	241	187	0.583
95	260	243	171	202	194	-	289	229	0.431
120	302	282	196	230	226	-	330	261	0.351
150	345	321	221	260	258	-	370	293	0.296
185	397	369	251	300	295	-	417	334	0.251
240	470	437	292	360	350	-	482	395	0.210
300	538	499	328	-	-	-	542	444	0.186
400	620	575	372	-	-	-	613	515	0.168
500	702	651	414	-	-	-	682	574	0.156

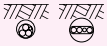
Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 3 & 4 CORE (CU) 90°C

Cable description:

3 & 4 Core LV, Non Flexible, Copper Conductor, Insulated and Sheathed (including neutral screened) Cables with or without Earth Conductor, Armoured or Non-Armoured Cables with X-90 XLPE, R-EP-90 EPR, R-CPE-90, R-CSP-90, or R-HF-90 LSOH Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed			Enclosed	Unenclosed Thermal Insulation		Buried Direct	Underground Wiring Enclosure	Three Phase Voltage Drop (@ 50Hz & 90 °C) mV/A.m
	Spaced	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation			
									
1.0	18	15	14	14	13	8	17	17	46.8
1.5	22	21	18	18	17	10	21	21	30.0
2.5	31	29	25	26	23	14	31	31	16.4
4	42	39	33	33	31	20	40	40	10.2
6	53	50	43	42	40	24	49	49	6.80
10	73	68	58	58	54	34	67	67	4.05
16	97	91	77	75	73	45	118	87	2.55
25	131	122	103	100	98	62	153	114	1.61
35	162	151	127	125	121	76	184	139	1.17
50	198	185	154	150	147	-	218	166	0.868
70	252	234	195	190	187	-	269	207	0.609
95	311	289	239	230	231	-	323	249	0.450
120	363	337	276	271	270	-	368	289	0.366
150	415	385	314	305	308	-	412	325	0.307
185	480	444	360	354	355	-	465	372	0.259
240	569	527	424	425	421	-	539	440	0.216
300	653	604	483	-	-	-	607	495	0.190
400	754	695	552	-	-	-	685	561	0.171
500	857	790	623	-	-	-	764	643	0.158

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS 3 & 4 CORE (CU) 110°C

Cable description:

3 & 4 Core LV, Non Flexible, Copper Conductor, Insulated and Sheathed (including neutral screened) Cables with or without Earth Conductor, Armoured or Non-Armoured Cables with R-HF-110 or R-E-110 Insulation. Based on AS/NZSS 3008.1.2.

Nominal Conductor Area mm²	Unenclosed			Enclosed	Enclosed and Unenclosed Thermal Insulation		Buried Direct	Underground Wiring Enclosure	Single Phase Voltage Drop (@ 50Hz & 110 °C) mV/A.m
	Spaced	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation			
									
1.0	21	19	18	17	14	10	18	20	49.7
1.5	27	26	24	21	17	13	22	25	31.9
2.5	37	35	32	31	25	18	32	35	17.4
4	50	47	43	41	32	24	41	46	10.8
6	63	60	54	50	41	30	52	56	7.22
10	87	81	74	68	55	41	69	75	4.29
16	114	108	97	92	73	54	129	99	2.70
25	154	144	129	124	100	72	167	129	1.71
35	189	178	158	150	120	89	201	155	1.24
50	231	216	193	186	149	-	240	188	0.920
70	291	273	243	232	185	-	294	230	0.645
95	361	336	297	289	231	-	353	283	0.475
120	418	389	345	333	266	-	402	322	0.385
150	478	445	393	385	308	-	452	367	0.322
185	551	513	450	440	352	-	510	414	0.271
240	654	607	531	533	426	-	591	491	0.224
300	750	696	607	-	-	-	667	553	0.196
400	867	804	697	-	-	-	756	644	0.175
500	985	912	789	-	-	-	845	721	0.160

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS AERIAL COPPER CONDUCTOR

Cable description:

LV Aerial Cables, with Copper Conductor and PVC Insulation.

Nominal Conductor Area mm²	PVC Insulated, exposed to sun			Voltage Drop (@50Hz & 75°C) mV/A.m	
	Single Core 2 m/s wind	2 Core Twisted, and 2 or 3 Core Parallel Webbed Cable 2 m/s wind	3 and 4 Core Twisted Cable 2 m/s wind	Single Phase	Three Phase
6	90	67	64	7.75	6.71
10	124	91	87	4.63	4.01
16	165	122	114	2.94	2.55
25	218	162	152	1.93	1.67
35	264	195	182	1.45	1.26
50	315	234	219	1.14	0.988
70	396	293	276	0.886	0.767

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS AERIAL ALUMINIUM CONDUCTOR

Cable description:

LV Aerial Cables with Aluminium Conductor and PVC Insulation.

Code name	Nominal Conductor Area mm²	Current Rating Sill Air (Amps)	Current Rating 1 m/s (Amps)
NAMU	24.5	92	152
KUTU	49.5	146	233
FLY	63.6	172	272
RANGO	73.6	190	298
WASP	106	242	369
BEETLE	109	243	371
WEKE	122	267	401
WETA	167	329	487

Note:

Current ratings are based on an ambient temperature of 30°C, a maximum conductor temperature of 75°C and intensity of solar radiation at 1000 W/m².

CURRENT RATINGS FLEXIBLE CORDS

Nominal Conductor Area mm²	Current Carrying Capacity A	Single Phase Voltage Drop (@50Hz & 75°C) mV/A.m	Three Phase Voltage Drop (@50Hz & 75°C) mV/A.m
0.5 (See Note 2)	3	94.9	82.2
0.75	7.5	63.3	54.8
1.0	10	47.5	41.1
1.5	16	32.3	28.0
2.5	20	19.4	16.8
4.0	25	12.0	10.4

Note:

1. Where a flexible cord is wound on a drum, multiply current-carrying capacity by the appropriate factor, as follows:

Number of layers:	1	2	3	4
Derating factor:	0.76	0.58	0.47	0.40

2. Not applicable for tinsel conductor.
3. Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS FLEXIBLE CABLE 90°C

Cable description:

3 Single Core LV, Copper Conductor, Sheathed and Unsheathed, Non-Armoured Cables with X-90 Insulation.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Three Phase Voltage Drop (@ 50Hz & 90°C) mV/A.m	
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation					
												
10	88	76	70	53	61	50	35	72	71	85	4.22	4.22
16	117	100	94	69	80	64	47	125	91	108	2.68	2.68
25	156	133	125	91	103	85	64	162	117	141	1.73	1.74
35	195	166	155	113	130	106	79	193	143	169	1.24	1.24
50	245	210	196	141	158	125	-	229	174	203	0.869	0.875
70	311	265	248	177	201	161	-	280	217	248	0.622	0.630
95	375	319	298	211	235	194	-	335	254	295	0.483	0.492
120	447	381	354	249	282	230	-	381	299	342	0.388	0.399
150	517	440	409	286	320	260	-	428	338	383	0.325	0.338
185	594	505	470	326	367	295		484	382	442	0.280	0.295
240	716	608	565	387	430	352	-	560	445	510	0.233	0.251
300	827	701	650	442	504	413	-	630	513	591	0.207	0.227
400	1000	840	780	525	586	470	-	715	593	670	0.183	0.204
500	1168	972	903	601	693	557	-	805	687	756	0.169	0.192
630	1382	1133	1052	693	791	628	-	902	780	877	0.157	0.181

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS FLEXIBLE CABLE 110°C

Cable description:

3 Single Core LV, Copper Conductor, Sheathed and Unsheathed, Non-Armoured Cables with X-HF-110 or R-E-110 Insulation.

Nominal Conductor Area mm²	Unenclosed				Enclosed	Thermal Insulation		Buried Direct	Underground Wiring Enclosure		Three Phase Voltage Drop (@ 50Hz & 110°C) mV/A.m	
	Spaced	Spaced from Surface	Touching	Exposed to Sun	Wiring Enclosure in Air	Partially Surrounded by Thermal Insulation	Completely Surrounded by Thermal Insulation					
												
10	106	91	86	72	75	61	43	75	81	93	4.48	4.48
16	139	120	112	94	97	79	57	138	103	122	2.84	2.85
25	185	159	149	124	129	107	77	178	133	157	1.84	1.84
35	229	197	184	153	158	129	94	213	160	187	1.31	1.31
50	289	249	232	192	203	156	-	251	199	225	0.921	0.926
70	364	312	292	240	250	200	-	308	243	275	0.658	0.665
95	439	378	352	288	296	244	-	369	284	334	0.509	0.518
120	521	447	417	339	354	288	-	420	335	378	0.408	0.419
150	601	516	482	391	404	327	-	472	378	424	0.340	0.353
185	689	592	552	446	469	384	-	533	428	489	0.293	0.307
240	829	712	663	534	576	470	-	618	510	565	0.242	0.259
300	958	820	764	612	655	536	-	696	575	654	0.213	0.232
400	1155	982	915	730	810	615	-	791	687	742	0.187	0.208
500	1348	1138	1059	841	924	740	-	894	773	864	0.172	0.194
630	1598	1327	1235	977	1063	842	-	1004	878	975	0.159	0.182

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS FLEXIBLE CABLE 75°C

Cable description:

PVC Insulated LV Flexible Cables with Copper Conductor.

Nominal Conductor Area mm²	Protected from Sun				Exposed to Sun				1 Phase Voltage Drop (@ 50Hz & 75°C) mV/A.m	3 Phase Voltage Drop (@ 50Hz & 75°C) mV/A.m		3 Phase Voltage Drop (@ 50Hz & 75°C) mV/A.m
	2 Single Core	3 Single Core	2 Core	3 and 4 Core	2 Single Core	3 Single Core	2 Core	3 and 4 Core	Single Core			2, 3 and 4 Core
1.5	19	19	21	18	11	11	16	14	32.3	28.0	28.0	28.0
2.5	25	25	29	24	15	15	22	18	19.4	16.8	16.8	16.8
4	34	34	38	32	19	19	30	25	12.0	10.4	10.4	10.4
6	43	43	48	41	24	24	36	32	8.03	6.95	6.96	6.95
10	62	62	67	58	33	33	51	43	4.65	4.03	4.03	4.03
16	81	81	89	76	43	43	67	57	2.96	2.56	2.56	2.55
25	107	107	119	101	56	56	88	74	1.91	1.65	1.66	1.65
35	133	133	146	125	67	67	107	91	1.36	1.18	1.18	1.18
50	168	168	184	157	83	83	133	114	0.960	0.831	0.837	0.827
70	211	211	230	197	101	101	165	140	0.688	0.596	0.603	0.591
95	254	254	275	236	119	119	194	165	0.535	0.463	0.473	0.457
120	302	301	325	278	137	137	227	193	0.431	0.373	0.385	0.367
150	349	348	372	319	154	154	257	219	0.361	0.313	0.327	0.306
185	400	399	422	363	171	170	287	245	0.314	0.272	0.287	0.264
240	481	479	500	431	197	196	335	286	0.262	0.227	0.245	0.219

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

CURRENT RATINGS ELASTOMERIC FLEX 90°C

Cable description:

Elastomer Insulated Flexible Cables with Copper Conductor, R-EP-90, R-CSP-90 or R-CPE-90 Insulation.

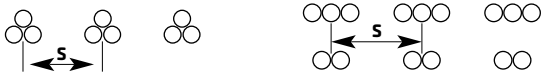
Nominal Conductor Area mm²	Protected from Sun				Exposed to Sun				1 Phase Voltage Drop (@ 50Hz & 90°C) mV/A.m	3 Phase Voltage Drop (@ 50Hz & 90°C) mV/A.m		3 Phase Voltage Drop (@ 50Hz & 90°C) mV/A.m
	2 Single Core	3 Single Core	2 Core	3 and 4 Core	2 Single Core	3 Single Core	2 Core	3 and 4 Core	Single Core			Multi-core
1.5	22	22	25	21	18	18	22	19	33.9	29.4	29.4	29.4
2.5	30	30	33	29	23	23	29	24	20.3	17.6	17.6	17.6
4	40	40	44	37	30	30	39	32	12.6	10.9	10.9	10.9
6	51	51	56	47	37	37	48	41	8.42	7.29	7.29	7.29
10	70	70	79	67	53	53	68	57	4.87	4.22	4.22	4.22
16	94	94	106	89	69	69	90	76	3.09	2.68	2.68	2.68
25	125	125	41	119	91	91	119	101	2.00	1.73	1.74	1.73
35	155	155	174	149	113	113	147	124	1.43	1.24	1.24	1.23
50	196	196	219	187	141	141	184	156	1.00	0.869	0.875	0.866
70	248	248	276	235	177	177	230	195	0.718	0.622	0.630	0.618
95	298	298	330	282	211	211	273	232	0.558	0.483	0.492	0.477
120	354	354	391	333	249	249	321	273	0.448	0.388	0.399	0.383
150	410	409	449	383	286	286	366	311	0.375	0.325	0.338	0.318
185	471	470	570	444	326	326	415	352	0.323	0.280	0.295	0.273
240	567	565	609	527	388	387	491	417	0.269	0.233	0.251	0.225
300	653	650	696	604	444	442	558	473	0.239	0.207	0.227	0.198
400	787	780	826	695	528	525	657	554	0.211	0.183	0.204	0.174
500	913	903	948	790	607	607	747	630	0.195	0.169	0.192	0.16
630	1066	1052	-	-	703	693	-	-	0.181	0.157	0.181	-

Note:

Refer to Cable Selection in General Information for more information and data based on AS/NZSS 3008.1.2.

DERATING FACTORS SINGLE CORE

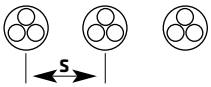
Derating factors for groups of circuits of cables buried direct in the ground - Single Core cables.



Number Of Circuits	Derating factors					
	Touching		Distance (S), m			
	Trefoil	Laid flat	0.15	0.30	0.45	0.60
2	0.78	0.81	0.83	0.88	0.91	0.93
3	0.66	0.70	0.73	0.79	0.84	0.87
4	0.61	0.64	0.68	0.74	0.81	0.85
5	0.56	0.60	0.64	0.73	0.79	0.83
6	0.53	0.57	0.61	0.71	0.78	0.82
7	0.50	0.54	0.59	0.69	0.76	0.82
8	0.49	0.53	0.57	0.68	0.76	0.81
9	0.47	0.51	0.56	0.67	0.75	0.81
10	0.46	0.50	0.55	0.67	0.75	0.80
11	0.44	0.49	0.54	0.66	0.74	0.80
12	0.43	0.48	0.53	0.66	0.74	0.80

DERATING FACTORS MULTICORE

Derating factors for groups of circuits of cables buried direct in the ground - Multicore cables.



Number Of Cables In Group	Derating factors				
	Touching	Distance (S), m			
		0.15	0.30	0.45	0.60
2	0.81	0.87	0.91	0.93	0.95
3	0.70	0.78	0.84	0.88	0.90
4	0.63	0.74	0.81	0.86	0.89
5	0.59	0.70	0.78	0.84	0.87
6	0.55	0.68	0.77	0.83	0.87
7	0.52	0.66	0.75	0.82	0.86
8	0.50	0.64	0.75	0.81	0.86
9	0.48	0.63	0.74	0.81	0.85
10	0.47	0.62	0.73	0.80	0.85
11	0.45	0.61	0.73	0.80	0.85
12	0.44	0.60	0.72	0.80	0.84

DERATING FACTORS SINGLE CORE ENCLOSED

Derating factors for groups of circuits of cables installed in underground wiring enclosures - Single Core cables enclosed separately.

Number Of Circuits	Derating factors		
	Touching	Distance (S), m	
		0.45	0.60
2	0.87	0.91	0.93
3	0.78	0.84	0.87
4	0.74	0.81	0.85
5	0.70	0.79	0.83
6	0.69	0.78	0.82
7	0.67	0.76	0.82
8	0.66	0.76	0.81
9	0.65	0.75	0.81
10	0.64	0.75	0.80
11	0.63	0.74	0.80
12	0.63	0.74	0.80

DERATING FACTORS MULTICORE ENCLOSED

Derating factors for groups of circuits of cables installed in underground wiring enclosures - Multicore cables enclosed separately or more than one Single Core cable per wiring enclosure.

Number Of Circuits	Derating factors			
	Touching	Distance (S), m		
		0.30	0.45	0.60
2	0.90	0.93	0.95	0.96
3	0.83	0.88	0.91	0.93
4	0.79	0.85	0.89	0.92
5	0.75	0.83	0.88	0.91
6	0.73	0.82	0.87	0.90
7	0.71	0.81	0.86	0.89
8	0.70	0.80	0.85	0.89
9	0.68	0.79	0.85	0.89
10	0.67	0.79	0.85	0.89
11	0.66	0.78	0.84	0.88
12	0.66	0.78	0.84	0.88

RATING FACTORS AIR/CONCRETE SLAB

Rating factors for variations in ambient temperature for cables in air or heated concrete slabs.

Conductor Temp °C	Rating Factor																
	Air Ambient Temperature (see Note 1), °C																
	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	100
110	1.08	1.06	1.03	1.0	0.97	0.93	0.90	0.87	0.83	0.79	0.75	0.71	0.66	0.61	0.56	0.50	0.36
90	1.15	1.09	1.05	1.0	0.95	0.91	0.85	0.80	0.74	0.66	0.59	0.52	0.43	0.31	0.17	-	-
80	1.17	1.12	1.06	1.0	0.95	0.89	0.82	0.75	0.68	0.59	0.50	0.40	0.24	-	-	-	-
75	1.18	1.12	1.06	1.0	0.94	0.88	0.80	0.72	0.63	0.53	0.43	0.32	-	-	-	-	-

Note:

1. For heated concrete slabs, the ambient temperature shall be taken as the operating temperature of the slab.

RATING FACTORS BURIED

Rating factors for variations in soil ambient temperature for cables buried direct in ground or in underground wiring enclosures.

Conductor Temp °C	Rating Factor						
	Soil Ambient Temperature, °C						
	10	15	20	25	30	35	40
110	1.02	1.00	0.97	0.95	0.92	0.89	0.86
90	1.04	1.00	0.96	0.93	0.91	0.87	0.83
80	1.04	1.00	0.95	0.92	0.88	0.83	0.78
75	1.04	1.00	0.95	0.91	0.86	0.81	0.75

Rating factors for variations in depth of laying for cables buried direct in the ground - Single Core or Multicore.

Depth Of laying (see note 2) m	Rating Factor		
	Conductor size, mm^2		
	Up to 50	Above 50 up to 300	Above 300
0.5	1.00	1.00	1.00
0.6	0.99	0.98	0.97
0.8	0.97	0.96	0.94
1.0	0.95	0.94	0.92
1.25	0.94	0.92	0.90
1.5	0.93	0.91	0.89
1.75	0.92	0.89	0.87
2.0	0.91	0.88	0.86
2.5	0.90	0.87	0.85
3.0 or more	0.89	0.86	0.83

Note:

1. The ambient temperature at the surfaace is to be taken at 30°C and not 15°C as at a depth of 0.5m.
2. Measured to centre of enclosure of trefoil group of cables.

RATING FACTORS UNDERGROUND ENCLOSURES

Rating factors for variations in depth of laying for cables installed in underground wiring enclosures - Single Core or Multicore cables.

Depth Of Laying (see note 2) m	Rating Factor	
	Single Core*	Multicore
0.5	1.00	1.00
0.6	0.98	0.99
0.8	0.95	0.97
1.0	0.93	0.96
1.25	0.90	0.95
1.5	0.89	0.94
1.75	0.88	0.94
2.0	0.87	0.93
2.5	0.86	0.93
3.0 or more	0.85	0.92

*These rating factors apply to single-core cables enclosed separately, or grouped in a single wiring enclosure.

Note:

1. The ambient temperature at the surface is to be taken at 30°C and not 15°C as at a depth of 0.5m. For depth less than 0.5m, see Table 3(4) of AS/NZS 3008.1.2.
2. Measured to centre of enclosure of trefoil group of enclosures.

Rating factors for cables buried direct in ground and for cables installed in underground wiring enclosures where the thermal resistivity of the soil varies from 1.2°C.m/W.

Rating Factor					
Thermal Resistivity Of Soil °C.m/W	Multicore Cable Buried Direct	Two Or Three Single-Core Cable Buried Direct	Multicore Cable In A Wiring Enclosure	Two Single-Core Cables In A Wiring Enclosure*	Three Single-Core Cables In A Wiring Enclosure*
0.8	1.09	1.16	1.03	1.06	1.08
0.9	1.07	1.11	1.02	1.04	1.06
1.0	1.04	1.07	1.02	1.03	1.04
1.2	1.00	1.00	1.00	1.00	1.00
1.5	0.92	0.90	0.95	0.94	0.92
2.0	0.81	0.80	0.88	0.86	0.83
2.5	0.74	0.72	0.83	0.80	0.77
3.0	0.69	0.66	0.78	0.75	0.71

*These rating factors apply to single-core cables enclosed separately, or grouped in a single wiring enclosure.

Cables in Conduits

Effective Cross Sectional Areas of PVC Cables

Appendix C6 of AS/NZS 3000.2007 gives comprehensive guidance on the number of cables installed in conduits. The basis to the calculation for the number of cables is:

The number of cables that can be installed in a circular conduit is determined from the ratios of the cross-sectional areas of the enclosure and the cable as follows:

$$\text{Number of cables} = \frac{\text{internal cross-sectional area of enclosure}}{\text{cross-sectional area of cable}} \times \text{space factor}$$

where the space factor recognises the reduction of space available from the circular geometry of the cables and enclosures:

For one cable in enclosure:	0.5
For two cables in enclosure:	0.33
For three or more cables in enclosure:	0.4

It is recommended that the installer refer to tables C9-C11 of AS/NZS 3000 for further guidance.

General Information

General Information

3 PHASE FORMULAE

Desired Data	Single-Phase	Three-Phase
I when kVA is known	$\frac{kVA \cdot 1000}{E_o}$	$\frac{kVA \cdot 1000}{\sqrt{3} \cdot E}$
I when kW is known	$\frac{kW \cdot 1000}{E_o \cdot pf}$	$\frac{kW \,.\, 1000}{\sqrt{3} \cdot E \cdot pf}$
I when hp is known	$\frac{hp \cdot 746}{E_o \cdot \%Eff \cdot pf}$	$\frac{hp \,.\, 746}{\sqrt{3} \cdot E \cdot \%Eff \cdot pf}$
kVA	$\frac{\mathbf{I} \cdot E_o}{1000}$	$\frac{\mathbf{I} \cdot E \cdot \sqrt{3}}{1000}$
kW	$\frac{\mathbf{I} \cdot E_o \cdot pf}{1000}$	$\frac{\mathbf{I} \cdot E \cdot \sqrt{3} \cdot pf}{1000}$
hp	$\frac{\mathbf{I} \cdot E_o \cdot \%Eff \cdot pf}{746}$	$\frac{\mathbf{I} \cdot E \cdot \sqrt{3} \cdot \%Eff \cdot pf}{746}$

Note:

The above table lists formulae commonly used for determining various parameters of an electrical system:

Where:

E_o =	Single phase voltage, in volts. Eg 230V.
E =	Three phase line voltage, in volts. Eg 400V (**E** = √3 x **E_o**).
I =	Current in amperes.
%Eff =	Percent efficiency in decimals.
pf =	Power factor in decimals.
kVA =	Kilovolt-ampere.
hp =	Horsepower (output).
kW =	Kilowatts (input).
Power Output =	Power Input x %Eff.
√3 =	1.732.

SINGLE PHASE MOTOR CURRENT

Power Output		Single Phase Voltage (V)				
kW	hp	110	220	230	240	250
		Current Rating* (A)				
0.37	0.5	4.71	2.35	2.25	*2.16*	*2.07*
0.56	0.75	7.06	*3.53*	*3.38*	*3.24*	*3.11*
0.75	1	9.42	*4.71*	*4.50*	*4.32*	*4.14*
1.1	1.5	14.1	7.06	6.76	6.48	6.22
1.5	2	18.8	9.42	9.01	8.63	8.29
1.9	2.5	23.5	11.8	11.3	10.8	10.4
2.2	3	28.3	14.1	13.5	13.0	12.4
3.0	4	37.7	18.8	18.0	17.3	16.6
3.7	5	47.1	23.5	22.5	21.6	20.7
4.5	6	56.5	28.3	27.0	25.9	24.9
5.2	7	65.9	33.0	31.5	30.2	29.0
5.6	7.5	70.6	35.3	33.8	32.4	31.1
6.0	8	75.4	37.7	36.0	34.5	33.2
6.7	9	84.8	42.4	40.5	38.9	37.3
7.5	10	94.2	47.1	45.0	43.2	41.4
9.3	12.5	118	58.9	56.3	54.0	51.8
11.2	15	141	70.6	67.6	64.8	62.2
14.9	20	188	94.2	90.1	86.3	82.9
18.7	25	235	118	113	108	104
22.4	30	283	141	135	130	124

THREE PHASE MOTOR CURRENT

Power Output		Three Phase Line Voltage (V)				
kW	hp	380	400	415	440	500
		Current Rating* (A)				
0.37	0.5	0.79	0.75	0.72	*0.68*	*0.60*
0.56	0.75	1.18	*1.12*	*1.08*	*1.02*	*0.90*
0.75	1	1.57	*1.50*	*1.44*	*1.36*	*1.20*
1.1	1.5	2.36	2.24	2.16	2.04	1.79
1.5	2	3.15	2.99	2.88	2.72	2.39
1.9	2.5	3.94	3.74	3.60	3.40	2.99
2.2	3	4.72	4.49	4.32	4.08	3.59
3.0	4	6.30	5.98	5.77	5.44	4.79
3.7	5	7.87	7.48	7.21	6.80	5.98
4.5	6	9.44	8.97	8.65	8.16	7.18
5.2	7	11.0	10.5	10.1	9.52	8.37
5.6	7.5	11.8	11.2	10.8	10.2	8.97
6.0	8	12.6	12.0	11.5	10.9	9.57
6.7	9	14.2	13.5	13.0	12.2	10.8
7.5	10	15.7	15.0	14.4	13.6	12.0
9.3	12.5	19.7	18.7	18.0	17.0	15.0
11.2	15	23.6	22.4	21.6	20.4	17.9
14.9	20	31.5	29.9	28.8	27.2	23.9
18.7	25	39.4	37.4	36.0	34.0	29.9
22.4	30	47.2	44.9	43.2	40.8	35.9

*Approximate full load currents for standard AC induction motors based on power factor and efficiency of 0.8 and 0.9 respectively.

SHORT CIRCUIT CAPACITY

Short-Circuit Capacity* (kA) for one second.

Nominal Conductor Area mm²	Initial Conductor Temperature							
	PVC Insulated Cable						XLPE Insulated Cable	
	75°C	90°C	105°C	75°C	90°C	105°C	90°C	90°C
	Copper			Aluminium			Copper	Aluminium
1.0	0.111	0.100	0.088	0.074	0.066	0.058	0.143	0.095
1.5	0.167	0.150	0.131	0.110	0.099	0.087	0.215	0.142
2.5	0.278	0.250	0.219	0.184	0.165	0.145	0.358	0.236
4.0	0.444	0.400	0.350	0.294	0.264	0.232	0.572	0.378
6.0	0.666	0.599	0.526	0.442	0.396	0.347	0.858	0.567
10	1.11	0.999	0.876	0.736	0.660	0.579	1.43	0.945
16	1.78	1.60	1.40	1.18	1.06	0.926	2.29	1.51
25	2.78	2.50	2.19	1.84	1.65	1.45	3.58	2.36
35	3.89	3.50	3.07	2.58	2.31	2.03	5.01	3.31
50	5.55	5.00	4.38	3.68	3.30	2.90	7.15	4.73
70	7.77	6.99	6.13	5.15	4.62	4.05	10.0	6.62
95	10.5	9.49	8.32	6.99	6.27	5.50	13.6	8.98
120	13.3	12.0	10.5	8.83	7.92	6.95	17.2	11.3
150	16.7	15.0	13.1	11.0	9.90	8.69	21.5	14.2
185	20.5	18.5	16.2	13.6	12.2	10.7	26.5	17.5
240	26.6	24.0	21.0	17.7	15.8	13.9	34.3	22.7
300	33.3	30.0	26.3	22.1	19.8	17.4	42.9	28.4
400	39.5	34.2	28.3	26.1	22.6	18.7	57.2	37.8
500	49.4	42.8	35.4	32.6	28.3	23.4	71.5	47.3
630	62.2	53.9	44.6	41.1	35.7	29.5	90.1	59.5

Note:

1. *Short-circuit capacities are based on maximum permissible temperature limits of: 160°C for PVC insulation with conductor up to and including 300mm². 140°C for PVC insulation with conductor greater than 300mm². 250°C for XLPE insulation. Short-circuit capacities have to be derated if short-circuit temperature limits of other components of the circuit, eg., joints, are less than those stated.
2. The short-circuit capacity for durations up to and including 5 seconds may be calculated with the following formula:

$$I_k = \frac{I_i}{\sqrt{t_k}}$$

where I_k = short-circuit capacity during the time, t_k.
I_i = short-circuit capacity for 1 second.
t_k= short-circuit duration, seconds.

FLEXIBLE CONDUCTORS

Conductor, DC Resistance to AS/NZS 1125 and Nominal Diameter.

Nominal Conductor Area mm²	Plain Copper		Tinned Copper	
	Conductor Nominal Diameter mm	Max. dc Resistance at 20°C Ω/km	Conductor Nominal Diameter mm	Max. dc Resistance at 20°C Ω/km
0.5	0.89	39.0	0.89	40.1
0.75	1.09	26.0	1.09	26.7
1.0	1.26	19.5	1.26	20.0
1.5	1.54	13.3	1.51	13.7
2.5	1.98	7.98	1.95	8.21
4.0	2.51	4.95	2.48	5.09

NON COMPACTED CONDUCTORS

Conductor, DC Resistance to AS/NZS 1125 and Nominal Diameter.

Nominal Conductor Area mm²	Annealed Copper			Aluminium	
	Conductor Nominal Diameter mm	Plain Max. dc Resistance at 20°C Ω/km	Tinned Max. dc Resistance at 20°C Ω/km	Conductor Nominal Diameter mm	Max. dc Resistance at 20°C Ω/km
*1.0	1.13	18.1	18.2	-	-
1.0	1.20	21.2	21.6	-	-
1.5	1.50	13.6	13.8	-	-
*2.5	1.78	7.41	7.56	-	-
2.5	2.0	7.41	7.56	-	-
4.0	2.5	4.61	4.70	-	-
6.0	3.1	3.08	3.11	-	-
10	4.0	1.83	1.84	-	-
16	5.1	1.15	1.16	5.1	1.91
25	6.4	0.727	0.734	6.4	1.20
35	7.6	0.524	0.529	7.5	0.868
50	8.9	0.387	0.391	8.8	0.641
70	10.6	0.268	0.270	10.6	0.443
95	12.5	0.193	0.195	12.5	0.320
120	14.1	0.153	0.154	14.1	0.253
150	15.7	0.124	0.126	15.6	0.206
185	17.5	0.0991	0.100	17.5	0.164
240	20.1	0.0754	0.0762	20.1	0.125
300	22.6	0.0601	0.0607	22.4	0.100
400	25.5	0.0470	0.0475	25.5	0.0778
Δ500	28.8	0.0366	0.0369	28.8	0.0605
Δ630	33.0	0.0283	0.0286	32.7	0.0469

Notes:
* Single Wire Conductor. Δ Single core only.

COMPACTED CONDUCTORS

Conductor, DC Resistance to AS/NZS 1125 and Nominal Diameter.

Nominal Conductor Area mm²	Plain Copper		Aluminium	
	Conductor Nominal Diameter mm	Max. dc Resistance at 20°C Ω/km	Conductor Nominal Diameter mm	Max. dc Resistance at 20°C Ω/km
16	4.8	1.15	4.8	1.91
25	6.1	0.727	6.1	1.20
35	7.1	0.524	7.1	0.868
50	8.2	0.387	8.2	0.641
70	9.8	0.268	9.8	0.443
95	11.5	0.193	11.5	0.320
120	12.9	0.153	12.9	0.253
150	14.3	0.124	14.3	0.206
185	16.1	0.0991	15.9	0.164
240	18.3	0.0754	18.3	0.125
300	20.8	0.0601	20.8	0.100
400	23.5	0.0470	23.5	0.0778
Δ500	26.6	0.0366	26.6	0.0605
Δ630	30.2	0.0283	30.2	0.0469

Notes:
Δ Single core only.

WIRE GAUGES

Wire Gauges and Standard Metric Wires.

SWG	Metric	B&S (AWG)	Approx. Diameter mm	Calculated Area mm^2
40	-	-	0.122	0.0117
-	-	36	.127	.0127
39	-	-	.132	.0137
-	-	35	.142	.0159
38	-	-	.152	.0182
-	-	34	.160	.0201
37	-	-	.173	.0234
-	-	33	.180	.0255
38	-	-	.193	.0293
-	0.20	-	.200	.0314
-	-	32	.203	.0325
35	-	-	.213	.0358
-	-	31	.226	.0401
34	-	-	.234	.0429
-	0.25	-	.250	.0491
33	-	30	.254	.0507
32	-	-	.274	.0591
-	-	29	.287	.0645
31	-	-	.295	.0682
-	0.30	-	.300	.0707
-	-	-	.305	.0730
30	-	-	.315	.0779
-	-	28	.320	.0806
29	-	-	.345	.0937
-	-	27	.361	.102
28	-	-	.376	.111
-	0.40	-	.400	.126
-	-	28	.404	.128
27	-	-	.417	.136
-	-	26	.455	.163
26	-	-	.457	.164
-	0.50	-	.500	.196
25	-	-	.508	.203
-	-	24	.511	.205
24	-	-	.559	.245
-	-	23	.574	.259
23	-	-	.610	.292
-	-	22	.643	.324
-	0.67	-	.670	.353
22	-	-	.711	.397
-	-	21	.724	.412
-	-	-	.737	.426
-	0.80	-	.800	.503

WIRE GAUGES

Wire Gauges and Standard Metric Wires.

SWG	Metric	B&S (AWG)	Approx. Diameter mm	Calculated Area mm^2
21	-	20	0.813	0.519
-	.85	-	.850	.568
-	-	19	.912	.652
20	-	-	.914	.657
-	-	-	1.0	.785
19	-	-	1.02	.81
-	-	18	1.02	.826
-	1.04	-	1.04	.849
-	-	-	1.12	.981
-	1.13	-	1.13	1.00
-	-	17	1.15	1.04
18	-	-	1.22	1.17
-	-	16	1.29	1.31
-	-	-	1.32	1.37
-	1.35	-	1.35	1.43
-	1.38	-	1.38	1.50
17	-	-	1.42	1.59
-	-	15	1.45	1.65
-	1.53	-	1.53	1.84
16	-	-	1.63	2.08
-	-	14	1.63	2.08
-	1.70	-	1.70	2.27
-	1.78	-	1.78	2.49
15	-	13	1.83	2.63
-	-	-	2.00	3.14
14	2.03	-	2.03	3.24
-	-	12	2.05	3.31
-	-	-	2.11	3.50
-	2.14	-	2.14	3.60
-	2.25	-	2.25	3.98
-	-	11	2.30	4.17
13	-	-	2.34	4.29
-	-	-	2.36	4.38
-	2.52	-	2.52	4.99
-	-	10	2.59	5.26
-	-	-	2.62	5.38
12	-	-	2.64	5.48
-	-	-	2.70	5.73
-	2.85	-	2.85	6.38
-	-	9	2.91	6.63
-	-	-	3.00	7.07
-	3.20	-	3.20	8.04
10	-	-	3.25	8.30

AMERICAN CONDUCTOR SIZES

American Conductor Sizes in Comparison.

AWG Size	CSA mm^2	MCM Size	CSA mm^2	MCM Size	CSA mm^2
9	6.63	250	127	900	456
8	8.37	300	152	950	481
7	10.6	350	177	1000	507
6	13.3	400	203	1100	557
5	16.8	450	228	1200	608
4	21.2	500	253	1300	659
3	26.7	550	279	1400	709
2	33.6	600	304	1500	760
1	42.4	650	329	1600	811
0	53.5	700	355	1700	861
2/0	67	750	380	1800	912
3/0	85	800	405	1900	963
4/0	107	850	431	2000	1010

American conductor sizes are based on American Wire Gauge (AWG) for small sizes and “circular mils” (CM) for larger sizes.“Mil” is an engineering term for one thousandth of an inch and the “circular mil” is the area of a circle one thousandth of an inch in diameter. The term MCM is used for one thousand circular mils.

IMPERIAL CONDUCTORS

A Comparison of Metric and Imperial Conductors for Fixed Cables.

Metric		Imperial		Calculated Area* mm²
Nominal Conductor Area mm²	Stranding No./mm	Nominal Conductor Area sq. in	Stranding No./mm	
0.5	1/0.80	-	-	0.503
-	-	0.001	1/.036	0.657
1.0	7/0.40	-	-	0.862
-	-	0.0015	1/.044	0.981
1.0	1/1.13	-	-	1.00
-	-	0.002	3/.029	1.28
1.5	7/0.50	-	-	1.37
1.5	1/1.38	-	-	1.50
-	-	0.003	3/.036	1.97
-	-	0.0032	1/.064	2.08
2.5	7/0.67	-	-	2.47
2.5	1/1.78	-	-	2.49
-	-	0.0045	7/.029	2.98
4	7/0.85	-	-	3.97
-	-	0.007	7/.036	4.60
6	7/1.04	-	-	5.95
-	-	0.01	7/.044	6.81
-	-	0.0145	7/.052	9.59
10	7/1.35	-	-	10.0
-	-	0.0225	7/.064	14.5
16	7/1.70	-	-	15.9
-	-	0.03	19/.044	18.6
-	-	0.04	19/.052	26.0
25	19/1.35	-	-	27.2
35	19/1.53	-	-	34.9
-	-	0.06	19/.064	39.4
50	19/1.78	-	-	47.3
-	-	0.075	19/.072	49.9
-	-	0.1	19/.083	66.3
70	19/2.14	-	-	68.3
-	-	0.12	37/.064	76.8
95	19/2.45	-	-	89.6
-	-	0.15	37/.072	97.2
120	37/2.03	-	-	120
-	-	0.2	37/.083	129
150	37.2.25	-	-	147
-	-	0.25	37/.093	162
185	37/2.52	-	-	185
-	-	0.3	37/.103	199
240	61/2.25	-	-	243
-	-	0.4	61/.093	267
300	61/2.52	-	-	304
-	-	0.5	61/.103	328
400	61/2.85	-	-	389
-	-	0.6	91/.093	399
-	-	0.75	91/.103	489
500	61/3.20	-	-	491
-	-	0.85	127/.093	557
630	91/3.00	-	-	643
-	-	1.0	127/.103	683
-	-	1.25	127/.112	807
800	127/2.85	-	-	810
1000	127/3.20	-	-	1020
-	-	1.5	127/.128	1050

* The area has been calculated as follows:

For single wires - based on nominal wire diameter. For stranded conductors - based on nominal wire diameter and number of wires.

EARTH SIZE

Minimum Copper Earthing Conductor Size.

Nominal Size Of ACTIVE Conductor	With COPPER Active Conductor	With ALUMINIUM Active Conductor
1.0	1.0*	-
1.5	1.5*	-
2.5	2.5	-
4.0	2.5	-
6.0	2.5	-
10	4	-
16	6	4
25	6	6
35	10	6
50	16	10
70	25	10
95	25	16
120	35	25
150	50	25
185	70	35
240	95	50
300	120	70
400	⩾120†	⩾ 95†
500	⩾120†	⩾ 95†
630	⩾120†	⩾120†
>630	⩾ 25% of Active size†	⩾25% of Active size†

*These earthing conductors may be used only where incorporated in a multicore cable or flexible cord, other than a lift travelling cable, in accordance with Clause 5.3.3.4(b) & (c) AS/NZS 3000:2007, Wiring Rules.
† A larger earthing conductor may be required to Safety Clause 5.3.3.1.1 of AS/NZS 3000:2007.

INSTALLATION & BENDING RADII

Cable Installation:

In installing PVC sheathed cables, care should be taken to ensure that the ambient and cable temperature has been above 0°C for the previous 24 hours to avoid the risk of cracking of the oversheath.

For groups of parallel single core circuits, the cables should be installed in close trefoil formation as hereunder:

(i) Two conductors per phase

(ii) Three conductors per phase

Recommended Minimum Bending Radii

The following table sets out the recommended minimum bending radii for single or multi-core cables for working voltages up to and including 0.6/1kV. The bending radius is related to the inner surface of the cable, not the axis. Care should be taken in planning a cable installation to allow for as large a bending radius as possible, as excessive bending can be detrimental to cable life expectancy.

Cable Description	During installation	Fixed or Location
1. Subject to overriding requirements of items 2 to 8 listed below:		
a. Overall cable diameter up to 25mm	6D	4D
b. Flexible cords or cables of all diameters	6D	4D
2. Overall cable diameter (exclude Flexible) >25mm	9D	6D
3. Mica Glass taped cables	12D	8D
4. Solid Al or Compacted (including Sector Shaped) Conductor	12D	8D
5. Armoured Cables	18D	12D
6. Metallic Screened Cables	18D	12D
7. HDPE Sheathed Cables	25D	15D
8. Nylon Covered Cables	30D*	20D*

Where D = Overall cable diameter in mm.
D*= Diameter over nylon jacket.

MAXIMUM PULLING TENSIONS

Using a pulling eye on the conductor:

Copper - 0.07 kN/mm^2 of conductor[3]).
Aluminium, Stranded - 0.05 kN/mm^2 of conductor.
Aluminium, Solid - 0.03 kN/mm^2 of conductor.

Using a pulling eye on the Steel Wire Armour:

$P = 0.005\ D^2$.

Using a Stocking grip: (see Note 1)

$P = 0.0035\ D^2$.

Where: P = Tension in kN.
D = Cable diameter in mm.

Notes:
1. When considering the use of a stocking grip the tension should not exceed the values given for a pulling eye on the conductor(s).
2. 1 kN = 102kgf.
3. Subject to a maximum of 25kN.

SAFE WORKING FORCE

Safe Working Force of Metric Flexible Cables and Cords.

Safe Working Force for cables subjected to straight tension without significant bending or flexing - **Safety factor 4 to 1.**

Nominal Conductor Area mm²	Single Core kN	2 Core kN	3 Core kN	4 Core kN	*More Than 4 Cores kN
0.5	0.015	0.030	0.045	0.06	0.015 x N
0.75	0.0225	0.045	0.0675	0.09	0.0225 x N
1.0	0.03	0.06	0.09	0.12	0.03 x N
1.5	0.045	0.09	0.135	0.18	0.045 x N
2.5	0.075	0.15	0.225	0.3	0.075 x N
4	0.12	0.24	0.36	0.48	0.12 x N
6	0.18	0.36	0.54	0.72	0.18 x N
10	0.3	0.6	0.90	1.2	0.3 x N
16	0.48	0.96	1.44	1.92	0.48 x N
25	0.75	1.5	2.25	3.0	0.75 x N
35	1.05	2.1	3.15	4.2	1.05 x N
50	1.5	3.0	4.5	6.0	1.5 x N
70	2.1	4.2	6.3	8.4	2.1 x N
95	2.85	5.7	8.55	11.4	2.85 x N
120	3.6	7.2	10.8	14.4	3.6 x N
150	4.5	9.0	13.5	18.0	4.5 x N
185	5.55	11.1	16.65	22.2	-
240	7.2	14.4	21.6	-	-
300	9.0	18.0	-	-	-

Safe Working Force of Metric Flexible Cables and Cords (Repeated Flexing).

Safe Working Force for cables subjected to repeated reeling or bending whilst under tension - **Safety factor 8 to 1.**

Nominal Conductor Area mm²	Single Core kN	2 Core kN	3 Core kN	4 Core kN	*More Than 4 Cores kN
0.5	0.0075	0.015	0.0225	0.03	0.0075 x N
0.75	0.01125	0.0225	0.03375	0.045	0.01125 x N
1.0	0.015	0.03	0.045	0.06	0.015 x N
1.5	0.0225	0.045	0.0675	0.09	0.0225 x N
2.5	0.0375	0.075	0.1125	0.15	0.0375 x N
4	0.06	0.12	0.18	0.24	0.06 x N
6	0.09	0.18	0.27	0.36	0.09x x N
10	0.15	0.3	0.45	0.6	0.15 x N
16	0.24	0.48	0.72	0.96	0.24 x N
25	0.375	1.75	1.125	1.5	0.375 x N
35	0.525	1.05	1.575	2.1	0.525 x N
50	0.75	1.5	2.25	3.0	0.75 x N
70	1.05	2.1	3.15	-	-
95	1.425	2.85	4.275	-	-
120	1.8	3.6	5.4	-	-
150	2.25	-	-	-	-
185	2.775	-	-	-	-
240	3.6	-	-	-	-
300	4.5	-	-	-	-
400	6.0	-	-	-	-
500	7.5	-	-	-	-

* Where N = the number of cores of the same size.

INSULATION & SHEATH PROPERTIES

Performance Rating of Cable Insulation and Sheathing Materials.

VG = very good, G = good, F = fair, P = poor.

MATERIAL	Recommended Max. Operating Temp.	Ozone & Partial Discharge Resistance	Weather Resistance	Oil Resistance	Water Resistance	Resistance to Chemicals	Resistance to Solvents	Abrasion Resistance	Combustion Propagation Resistance	Insulation Resistance	Electric Strength
PVC* - V-90	90	VG	G	G	G	G	F	G	G	G	G
PVC* - V-90 HT	105*										
XLPE X-90	90	F	G	F	VG	G	G	G	P	VG	VG
Polyethylene LD	70	F	G	F	VG	G	G	G	P	VG	VG
Polyethylene HD	90	F	G	F	VG	G	G	VG	P	VG	VG
R-EP-90	90	VG	VG	F	VG	G	F	F	P	VG	G
R-CSP-90, R-CPE-90	90	G	G	G	F	G	G	G	G	G	G
R-HF-90, R-HF-110	90/110	VG	VG	F	VG	G	F	F	VG	G	G
HD-85-PCP	85	G	G	G	G	G	G	G	G	G	G
HD-90-CSP	90	G	G	G	G	G	G	G	G	G	G
HF-110-R	90/110	VG	VG	G	VG	G	G	G	VG	G	G
Nylon		G	G	G	G	G	VG	VG	P	G	G

*Refer to PVC in Glossary of Terms in this Section.

PRYSMIAN

All the way.

Services beyond the ordinary.

You probably already know that we're world leading in quality cables. But did you know that we also provide you services from start to finish – and beyond. In our offer you'll find everything from cables cut to length to the best technical support on the market. Doing business with us pays off.

A brand of the

Prysmian Group

GLOSSARY OF TERMS

Al:
Aluminium conductor.

Ambient temperature for current-carrying capacity:
The temperature of the medium in the immediate neighbourhood of the installed cable -
a) including any increase in temperature due to materials or equipment to which the cables are connected, or are to be connected; but
b) excluding any increase in temperature which may be due to the heat arising from the cables at that point.

AS/NZS 2053:
Australian/New Zealand Standard - Conduits and fittings for electrical installations.

AS/NZS 3000:
Wiring Rules.

AS/NZSS 3008.1.2:
Australian/New Zealand Standard - Electrical installations - Selection of cables
Part 1.1: Cables for alternating voltages up to and including 0.6/1kV - Typical Australian installation conditions.

AS/NZS 3191:
Australian/New Zealand Standard - Approval and test specification - Electric flexible cords.

AS/NZS 5000:
Australian/New Zealand Standard - Electric Cables - Polymeric insulated.
Part 1: For working voltages up to and including 0.6/1kV.
Part 2: For working voltages up to and including 450/750V.
Part 3: Multicore control cables for working voltages up to and including 450/750V.

Bending radius, installed:
Refers to minimum bending radius to which the cable can be subjected to in its final position or location.

Bending radius, installing:
Refers to minimum bending radius to which the cable can be subjected to during the installation process.

BW:
Building wire, usually refers to single core, insulated and unsheathed cable.

Compacted conductor:
A stranded conductor in which, to reduce overall dimensions, wires have been laid up and pressed together. All conductors in this technical manual are non compacted unless specified.

Conductor:
That portion of a cable which has the specific function of carrying current.

Consumer terminals:
Refer to "Point of Supply".

CCS:
Copper Covered Steel.

Cu:
Copper conductor, usually refers to plain annealed copper.

HDCu:
Hard drawn copper conductor, for aerial application due to its higher tensile strength.

LSOH:
Low Smoke Zero Halogen.

LV:
Low voltage - a.c. = 50V and ≤1000V; d.c. = >120V and ≤1500V.

Overcurrent:
A current exceeding the rated value.

PACW:
Plain annealed copper wire.

PE:
Polyethylene (See Thermoplastic material).

Point of Supply:
The junction of the electricity distributor's conductors with the consumers mains. (Formerly known as consumers' terminals).

PVC:
Polyvinyl Chloride (See Thermoplastic material), the following grades are commonly used:

Insulation Grade	Sheathing Grade	Maximum continuous conductor temperature
V-90*, V-90HT*	3V-90, 5V-90	75°C

*The use of the higher temperature insulation compounds does not permit a higher current-carrying capacity. AS/NZ 3008.1.1 recommends 75°C for current-carrying capacity calculation.

**Where it is possible to guard against plastic flow, and where reduced insulation resistance can be tolerated, V-90HT can be operated at a temperature up to 105°C for an average of 500 hours per annum during the cable service life.

***Direct contact with polystyrene, polyurethane and similar thermal insulation material shall be avoided.

SDI:
Single core double insulated cable.

Short-circuit current:
A fault current resulting from a fault of negligible impedance between live conductors having a difference in potential under normal operating conditions.

Solid conductor:
A conductor consisting of a single wire.

TACW:
Tinned annealed copper wire.

TCu:
Tinned copper conductor.

Thermoplastic material:
A material that can be readily softened and resoftened by repeated heating, eg., PVC and PE.

Thermosetting material:
A material which cures by chemical reaction when heated and, when cured, cannot be resoftened by heating, eg., XLPE.

Tinsel conductor:
A conductor comprising fine flattened copper wires assembled in combination with textile material to achieve a high degree of flexibility.

TPS:
Thermoplastic sheath. (See Thermoplastic material).

XLPE:
Cross linked polyethylene. For LV application, usually refers to X-90 grade. (See Thermosetting material).

Certified System ™
Quality
ISO 9001
SAI GLOBAL

The Prysmian Guide to Cable has been completely revised and makes reference to the most recent information available. Information herein refers to common low voltage power and communication cables used by industry. For information not covered in this publication eg. High Voltage XLPE and EPR, Fibre Optics and other specialised Power and Communication cables please contact your nearest Prysmian Sales Office on 0800 492 225.

Prysmian New Zealand Limited

30 Binsted Road, New Lynn 0600 Auckland, New Zealand
Ph: (09) 827 3109 Toll Free: 0800 492 225
E-mail: sales.nz@prysmiangroup.com

www.prysmiancable.co.nz

A brand of the